TEST BANK

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STATISTICS FOR MANAGERS
USING MICROSOFT® EXCEL®
NINTH EDITION

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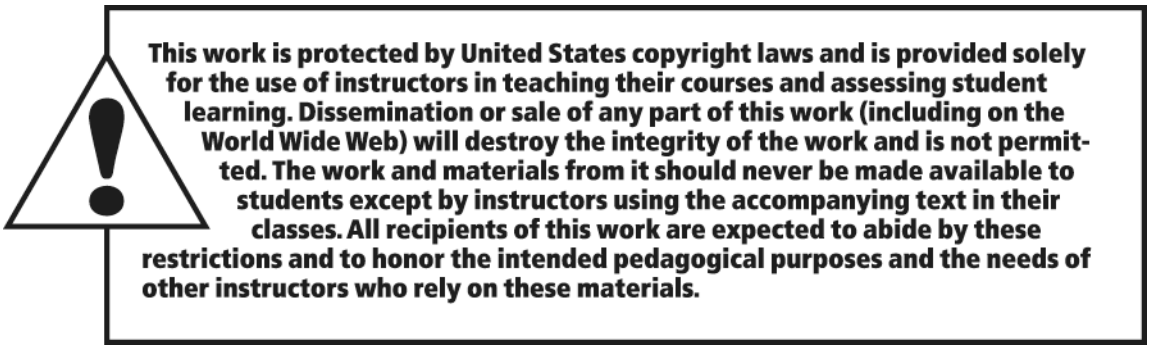

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CONTENTS

Getting Started: Important Things to Learn First

1. The process of using data collected from a small group to reach conclusions about a large group is called
   a) statistical inference.
   b) DCOVA framework.
   c) operational definition.
   d) descriptive statistics.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: inferential statistics

2. Those methods involving the collection, presentation, and characterization of a set of data in order to properly describe the various features of that set of data are called
   a) statistical inference.
   b) DCOVA framework.
   c) operational definition.
   d) descriptive statistics.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: descriptive statistics

3. The collection and summarization of the socioeconomic and physical characteristics of the employees of a particular firm are examples of
   a) inferential statistics.
   b) descriptive statistics.
   c) operational definition.
   d) DCOVA framework.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: descriptive statistics

4. The estimation of the population average family expenditure on food based on the sample average expenditure of 1,000 families is an example of
   a) inferential statistics.
   b) descriptive statistics.
   c) DCOVA framework.
   d) operational definition.

ANSWER:
a

TYPE: MC DIFFICULTY: Easy
KEYWORDS: inferential statistics

5. Which of the following is not an element of descriptive statistical problems?
   a) An inference made about the population based on the sample.
   b) The population or sample of interest.
   c) Tables, graphs, or numerical summary tools.
   d) Identification of patterns in the data.

ANSWER:
a
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: descriptive statistics

6. A study is under way in Yosemite National Forest to determine the adult height of American pine trees. Specifically, the study is attempting to determine what factors aid a tree in reaching heights greater than 60 feet tall. It is estimated that the forest contains 25,000 adult American pines. The study involves collecting heights from 250 randomly selected adult American pine trees and analyzing the results. Identify the variable of interest in the study.
   a) The age of an American pine tree in Yosemite National Forest.
   b) The height of an American pine tree in Yosemite National Forest.
   c) The number of American pine trees in Yosemite National Forest.
   d) The species of trees in Yosemite National Forest.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: variable

7. Most analysts focus on the cost of tuition as the way to measure the cost of a college education. But incidentals, such as textbook costs, are rarely considered. A researcher at Drummand University wishes to estimate the textbook costs of first-year students at Drummand. To do so, she monitored the textbook cost of 250 first-year students and found that their average textbook cost was $600 per semester. Identify the variable of interest to the researcher.
   a) The textbook cost of first-year Drummand University students.
   b) The year in school of Drummand University students.
   c) The age of Drummand University students.
   d) The cost of incidental expenses of Drummand University students.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: variable

8. True or False: Problems may arise when statistically unsophisticated users who do not understand the assumptions behind the statistical procedures or their limitations are misled by results obtained from computer software.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: statistical package

9. True or False: Managers need an understanding of statistics to be able to present and describe information accurately, draw conclusions about large populations based on small samples, improve processes, and make reliable forecasts.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: reasons for learning statistics

10. True or False: A professor computed the sample average exam score of 20 students and used it to estimate the average exam score of the 1,500 students taking the exam. This is an example of inferential statistics.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: descriptive statistics, inferential statistics

11. True or False: Using the number of registered voters who turned out to vote for the primary in Iowa to predict the number of registered voters who will turn out to vote in Vermont's primary is an example of descriptive statistics.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: descriptive statistics, inferential statistics

12. True or False: Compiling the number of registered voters who turned out to vote for the primary in Iowa is an example of descriptive statistics.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: descriptive statistics, inferential statistics

13. The Human Resources Director of a large corporation wishes to develop an employee benefit package and decides to select 500 employees from a list of all (N = 40,000)workers in order to study their preferences for the various components of a potential package. In this study, methods involving the collection, presentation, and characterization of the data are called _____.

ANSWER:
descriptive statistics/methods
TYPE: FI DIFFICULTY: Easy
KEYWORDS: descriptive statistics

14. The Human Resources Director of a large corporation wishes to develop an employee benefit package and decides to select 500 employees from a list of all (N = 40,000)workers in order to study their preferences for the various components of a potential package. In this study, methods that result in decisions concerning population characteristics based only on the sample results are called _____.

ANSWER:
inferential statistics/methods
TYPE: FI DIFFICULTY: Easy
KEYWORDS: inferential statistics

15. The oranges grown in corporate farms in an agricultural state were damaged by some unknown fungi a few years ago. Suppose the manager of a large farm wanted to study the impact of the fungi on the orange crops on a daily basis over a 6-week period. On each day a random sample of orange trees was selected from within a random sample of acres. The daily average number of damaged oranges per tree and the proportion of trees having damaged oranges were calculated. In this study, drawing conclusions on any one day about the true population characteristics based on information obtained from the sample is called _____.

ANSWER:
inferential statistics/methods
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: inferential statistics

16. The oranges grown in corporate farms in an agricultural state were damaged by some unknown fungi a few years ago. Suppose the manager of a large farm wanted to study the impact of the fungi on the orange crops on a daily basis over a 6-week period. On each day a random sample of orange trees was selected from within a random sample of acres. The daily average number of damaged oranges per tree and the proportion of trees having damaged oranges were calculated. In this study, the presentation and characterization of the two main measures calculated each day (i.e., average number of damaged oranges per tree and proportion of trees having damaged oranges) is called _____ .

ANSWER:
descriptive statistics/methods
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: descriptive statistics

17. The Commissioner of Health in New York State wanted to study malpractice litigation in New York. A sample of 31 thousand medical records was drawn from a population of 2.7 million patients who were discharged during 2010. Using the information obtained from the sample to predict population characteristics with respect to malpractice litigation is an example of _____.

ANSWER:
inferential statistics
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: inferential statistics

18. The Commissioner of Health in New York State wanted to study malpractice litigation in New York. A sample of 31 thousand medical records was drawn from a population of 2.7 million patients who were discharged during 2010. The collection, presentation, and characterization of the data from patient medical records are examples of _____.

ANSWER:
descriptive statistics/methods
TYPE: FI DIFFICULTY: Easy
KEYWORDS: descriptive statistics

19. True or False: Business analytics combine "traditional" statistical methods with methods and techniques from management science and information systems to form an interdisciplinary tool that supports fact-based management decision making.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: business analytics

20. Which of the following is not true about business analytics?
    a) It enables you to use statistical methods to analyze and explore data to uncover unforeseen relationships.
    b) It enables you to use management science methods to develop optimization models that impact an organization's strategy, planning, and operations.
    c) It enables you to use complex mathematics to replace the need for organizational decision making and problem solving.
    d) It enables you to use information systems methods to collect and process data sets of all sizes.

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: business analytics

21. True or False: "Big data" is a concrete concept with a precise operational definition.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: big data

22. True or False: "Big data" are data being collected in huge volumes and at very fast rates, and they typically arrive in a variety of forms, organized and unorganized.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: big data

23. True or False: In the current data-driven environment of business, the decisions you make will be increasingly based on gut or intuition supported by personal experience.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: business analytics

24. True or False: The D in the DCOVA framework stands for "data".

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

25. True or False: The D in the DCOVA framework stands for "define".

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

26. True or False: The C in the DCOVA framework stands for "categorize".

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

27. True or False: The C in the DCOVA framework stands for "collect".

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

28. True or False: The O in the DCOVA framework stands for “operationalize”.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

29. True or False: The O in the DCOVA framework stands for “organize”.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

30. True or False: The V in the DCOVA framework stands for “verify”.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

31. True or False: The V in the DCOVA framework stands for “visualize”.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

32. True or False: The A in the DCOVA framework stands for “apply”.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

33. True or False: The V in the DCOVA framework stands for “value”.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

34. Which of the following is not an attribute of big data?
    a) Variegated
    b) Velocity
    c) Volume
    d) Variety

ANSWER:
a

TYPE: TF DIFFICULTY: Easy
KEYWORDS: business analytics

35. True or False: If rising temperatures are followed immediately by an increase in crime in urban areas, we would attribute the two events to be an instance of logical causality.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: Starting points for learning statistics, page 6 text

36. An online marketing system that uses customer demand to adjust its item or service pricing is using _____ _____ in its strategy.

ANSWER:
dynamic pricing
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: flexibility, demand, page 1 text

37. Using software, you perform calculations more easily than by hand. This means which of the following:
    a) Using software is a guarantee you will not produce inappropriate solutions
    b) Memorization of software commands is necessary to using software competently
    c) Using the software while understanding the concepts that give the results is more important than having advanced arithmetic skills.
    d) Being able to construct statistical software applications from scratch is a necessary skill.

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: arithmetic skills, analytical skills

38. The Excel command used to insert a new worksheet into a workbook is _____ .

ANSWER: INSERT on the worksheet tab
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: EG.4 WORKING WITH a WORKBOOK

39. The Excel command used to display and review formulas is _____.

ANSWER:
CTRL + ` (grave accent)
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: EG.6 REVIEWING WORKSHEETS

Chapter 1: Defining and Collecting Data

1. Which of the following is a discrete quantitative (numerical) variable?
   a) The Dow Jones Industrial average
   b) The volume of water released from a dam
   c) The distance you drove yesterday.
   d) The number of employees of an insurance company

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

2. Which of the following is a continuous quantitative (numerical) variable?
   a) The color of a student's eyes
   b) The number of employees of an insurance company
   c) The amount of milk in a 2-liter carton.
   d) The number of gallons of milk sold at the local grocery store yesterday

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: continuous variable, types of data

3. To monitor campus security, the campus police office is taking a survey of the number of students in a parking lot each 30 minutes of a 24-hour period with the goal of determining when patrols of the lot would serve the most students. If X is the number of students in the lot each period, then X is an example of
   a) a categorical variable.
   b) a discrete variable.
   c) a continuous variable.
   d) a statistic.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

4. Researchers are concerned that the weight of the average American school child is increasing implying, among other things, that children's clothing should be manufactured and marketed in larger sizes. If X is the weight of school children sampled in a nationwide study without rounding, then X is an example of
   a) a categorical variable.
   b) a discrete variable.
   c) a continuous variable.
   d) a table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: continuous variable, types of data

5. The classification of student class designation (freshman, sophomore, junior, senior) is an example of
   a) a categorical variable.
   b) a discrete variable.
   c) a continuous variable.
   d) a table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

6. The classification of student major (accounting, economics, management, marketing, other) is an example of
   a) a categorical variable.
   b) a discrete variable.
   c) a continuous variable.
   d) a table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

7. The chancellor of a major university was concerned about alcohol abuse on her campus and wanted to find out the proportion of students at her university who visited campus bars on the weekend before the final exam week. Her assistant took a random sample of 250 students. The answer on "whether you visited campus bars on the weekend before the final exam week" from students in the sample is an example of _____.
   a) a categorical variable.
   b) a discrete variable.
   c) a continuous variable.
   d) a table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

SCENARIO 1-1
The manager of the customer service division of a major consumer electronics company is interested in determining whether the customers who have purchased a Blu-ray player made by the company over the past 12 months are satisfied with their products.

8. Referring to Scenario 1-1, the possible responses to the question "How many Blu-ray players made by other manufacturers have you used?" are values from a
   a) discrete variable.
   b) continuous variable.
   c) categorical variable.
   d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

9. Referring to Scenario 1-1, the possible responses to the question "Are you happy, indifferent, or unhappy with the performance per dollar spent on the Blu-ray player?" are values from a
   a) discrete numerical variable.
   b) continuous numerical variable.
   c) categorical variable.
   d) table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

10. Referring to Scenario 1-1, the possible responses to the question "What is your annual income rounded to the nearest thousands?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: discrete variable, types of data
EXPLANATION: Even though money is usually considered as a continuous variable, it should be considered as a discrete variable when rounded to the nearest thousands.

11. Referring to Scenario 1-1, the possible responses to the question "How much time do you use the Blu-ray player every week on the average?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: continuous variable, types of data

12. Referring to Scenario 1-1, the possible responses to the question "How many people are there in your household?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

13. Referring to Scenario 1-1, the possible responses to the question "How would you rate the quality of your purchase experience with 1 = excellent, 2 = good, 3 = decent, 4 = poor, 5 = terrible?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

14. Referring to Scenario 1-1, the possible responses to the question "What brand of Blu-ray player did you purchase?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

15. Referring to Scenario 1-1, the possible responses to the question "Out of a 100-point score with 100 being the highest and 0 being the lowest, what is your satisfaction level on the videocassette recorder that you purchased?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

16. Referring to Scenario 1-1, the possible responses to the question "In which year were you born?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

17. Referring to Scenario 1-1, the possible responses to the question "How many Blu-ray players made by other manufacturers have you used? “results in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: ratio scale, types of data

18. Referring to Scenario 1-1, the possible responses to the question "Are you happy, indifferent, or unhappy with the performance per dollar spent on the Blu-ray player?" result in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: ordinal scale, types of data

19. Referring to Scenario 1-1, the possible responses to the question "What is your annual income rounded to the nearest thousands?" result in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: ratio scale, types of data

20. Referring to Scenario 1-1, the possible responses to the question "How much time do you use the Blu-ray player every week on the average?" result in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: ratio scale, types of data

21. Referring to Scenario 1-1, the possible responses to the question "How many people are there in your household?" result in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: ratio scale, types of data

22. Referring to Scenario 1-1, the possible responses to the question "How would you rate the quality of your purchase experience with 1 = excellent, 2 = good, 3 = decent, 4 = poor, 5 = terrible?" result in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate

EXPLANATION: The rating is ordinal scale not an interval scale because the difference in rating between “excellent” and “good” does not have to be the same as the difference between “poor” and “terrible”.
KEYWORDS: ordinal scale, types of data

23. Referring to Scenario 1-1, the possible responses to the question "What brand of Blu-ray player did you purchase?" result in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: nominal scale, types of data

24. Referring to Scenario 1-1, the possible responses to the question "Out of a 100-point score with 100 being the highest and 0 being the lowest, what is your satisfaction level with the Blu-ray player that you purchased results in:
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
c
TYPE: MC DIFFICULTY: Difficult
EXPLANATION: The rating is interval scale not ordinal scale because the difference in rating between “80” and “90” can be treated as the same as the difference between “30” and “40” but a rating of “80” does not imply twice the level of satisfaction level as a rating of “40”.
KEYWORDS: interval scale, types of data

25. Referring to Scenario 1-1, the possible responses to the question "What is your age at last birthday ?” results in:
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
d- A 40-year-old is twice as old as a 20-year-old
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: interval scale, types of data

26. True or False: The possible responses to the question "How long have you been living at your current residence?" are values from a continuous variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: continuous variable, types of data

27. True or False: The possible responses to the question "How many times in the past three months have you visited a city park?" are values from a discrete variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

28. True or False: A continuous variable may take on any value within its relevant range even though the measurement device may not be precise enough to record it.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: continuous variable, types of data

29. True or False: Faculty rank (professor to lecturer) is an example of discrete numerical data.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

30. True or False: Student grades (A to F) are an example of continuous numerical data.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: categorical variables, types of data

31. True or False: The amount of coffee consumed by an individual in a day is an example of a discrete numerical variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: continuous variables, types of data

32. True or False: The answer to the question "What is your favorite color?" is an example of an ordinal scaled variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: nominal scale

33. True or False: The answer to the question "How do you rate the quality of your business statistics course" is an example of an ordinal scaled variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ordinal scale

34. True or False: The answer to the question "How many hours on average do you spend watching TV every week?" is an example of a ratio scaled variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ratio scale

35. True or False: The answer to the question "What is your sleeping bag temperature rating?" is an example of a ratio scaled variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: interval scale

36. An insurance company evaluates many numerical variables about a person before deciding on an appropriate rate for automobile insurance. The number of claims a person has made in the last 3 years is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

37. An insurance company evaluates many numerical variables about a person before deciding on an appropriate rate for automobile insurance. The distance a person drives in a year is an example of a _____ variable.

ANSWER:
continuous
TYPE: FI DIFFICULTY: Easy
KEYWORDS: continuous variable, types of data

38. An insurance company evaluates many numerical variables about a person before deciding on an appropriate rate for automobile insurance. A person's age is an example of a _____ numerical variable.

ANSWER:
continuous
TYPE: FI DIFFICULTY: Easy
KEYWORDS: continuous variable, types of data

39. An insurance company evaluates many numerical variables about a person before deciding on an appropriate rate for automobile insurance. How long a person has been a licensed driver is an example of a _____ numerical variable.

ANSWER:
continuous
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: continuous variable, types of data

40. An insurance company evaluates many numerical variables about a person before deciding on an appropriate rate for automobile insurance. The number of tickets a person has received in the last 3 years is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

41. In purchasing an automobile, there are several variables to consider. The body style of the car (sedan, coupe, wagon, etc.) is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

42. In purchasing an automobile, there are several variables to consider. The classification of the car as a subcompact, compact, standard, or luxury size is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

43. In purchasing an automobile, there are several variables to consider. The color of the car is an example of a _____ variable.

ANSWER:
categorical

TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

44. Most colleges admit students based on their achievements in several different areas. Whether a student has taken any advanced placement courses is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

45. Most colleges admit students based on their achievements in several different areas. The grade obtained in senior level English. (A, B, C, D, or F) is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: categorical variable, types of data

46. Most colleges admit students based on their achievements in several different areas. The total SAT score achieved by a student is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

47. The Dean of Students conducted a survey on campus. The gender of the student is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

48. The Dean of Students conducted a survey on campus. Class designation (Freshman, Sophomore, Junior, Senior) is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

49. The Dean of Students conducted a survey on campus. Major area of study is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

50. The Dean of Students conducted a survey on campus. SAT score in mathematics is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Easy
KEYWORDS: continuous variable, types of data

51. The Dean of Students conducted a survey on campus. Grade point average (GPA) is an example of a _____ numerical variable.

ANSWER:
continuous
TYPE: FI DIFFICULTY: Easy
KEYWORDS: continuous variable, types of data

52. The Dean of Students conducted a survey on campus. Number of credits currently enrolled for is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

53. The Dean of Students conducted a survey on campus. Number of clubs, groups, teams, and organizations affiliated with on campus is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Easy

54. A personal computer user survey was conducted. Computer brand primarily used is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

55. A personal computer user survey was conducted. Number of personal computers owned is an example of a _____ numeric variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

56. A personal computer user survey was conducted. The number of years using a personal computer is an example of a _____ numeric variable

ANSWER:
continuous
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: continuous variable, types of data

57. A personal computer user survey was conducted. Hours of personal computer use per week is an example of a _____ numeric variable

ANSWER:
continuous
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: continuous variable, types of data

58. A personal computer user survey was conducted. Primary word processing package used is an example of a _____ variable

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

59. A personal computer user survey was conducted. The number of computer magazine subscriptions is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

60. The brand of TV one owns is an example of an ordinal scaled variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: nominal scale, ordinal scale

61. The brand of TV one owns is an example of a numerical variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: categorical variable

62. Whether the university is private, or public is an example of a nominal scaled variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: nominal scale

63. Whether the university is private, or public is an example of a categorical variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: categorical variable

64. Marital status is an example of an ordinal scaled variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: nominal scale, ordinal scale

65. Marital status is an example of a numerical variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: categorical variable

66. The grade level (K-12) of a student is an example of a nominal scaled variable.

ANSWER:
True- Nominal scale is used just to identify the grade level as would be as a vehicle identification number. No subjective value is imputed.
TYPE: TF DIFFICULTY: Easy
KEYWORDS: nominal scale, ordinal scale

67. The grade level (K-12) of a student is an example of a numerical variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: categorical variable

68. The level of satisfaction ("Very unsatisfied", "Fairly unsatisfied", "Fairly satisfied", and "Very satisfied") in a class is an example of an ordinal scaled variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ordinal scale

69. The level of satisfaction ("Very unsatisfied", "Fairly unsatisfied", "Fairly satisfied", and "Very satisfied") in a class is an example of a categorical variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: categorical variable

70. The quality ("terrible", "poor", "fair", "acceptable", "very good" and "excellent") of a day care center is an example of a nominal scaled variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: nominal scale, ordinal scale

71. The quality ("terrible", "poor", "fair", "acceptable", "very good" and "excellent") of a day care center is an example of a numerical variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: categorical variable

72. The amount of alcohol consumed by a person per week will be measured on an interval scale.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: interval scale, ratio scale

73. The amount of alcohol consumed by a person per week is an example of a continuous variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: continuous variable

74. The number of defective apples in a single box will be measured on an interval scale.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: interval scale, ratio scale

75. The number of defective apples in a single box is an example of a continuous variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: discrete variable, continuous variable

76. The number of calories contained in a 12-ounce package of cheese will be measured on a ratio scale.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ratio scale

77. The number of calories contained in a 12-ounce package of cheese is an example of a discrete variable.

ANSWER:
True- Calories are measured in whole numbers
TYPE: TF DIFFICULTY: Easy
KEYWORDS: discrete variable, continuous variable

78. The amount of time a student spent studying for an exam will be measured on a ratio scale.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ratio scale

79. The amount of time a student spent studying for an exam is an example of a continuous variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: continuous variable

SCENARIO 1-2
A *Wall Street Journal* poll asked 2,150 adults in the U.S. a series of questions to find out their view on the U.S. economy.

80. Referring to Scenario 1-2, the population of interest is
    a) all the males living in the U.S. when the polled was taken.
    b) all the females living in the U.S. when the polled was taken.
    c) all the adults living in the U.S. when the poll was taken.
    d) all the people living in the U.S. when the poll was taken.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: population

81. Referring to Scenario 1-2, the 2,150 adults make up
    a) the population
    b) the sample
    c) the primary data source
    d) the secondary data source

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sample

82. Referring to Scenario 1-2, the possible responses to the question "How satisfied are you with the U.S. economy today with 1 = very satisfied, 2 = moderately satisfied, 3 = neutral, 4 = moderately dissatisfied and 5 = very dissatisfied?" are values from a
    a) discrete variable.
    b) continuous variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

83. Referring to Scenario 1-2, the possible responses to the question "How many people in your household are unemployed currently?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a

TYPE: MC DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

84. Referring to Scenario 1-2, the possible responses to the question "What do you think is the current number of people unemployed in the country?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

85. Referring to Scenario 1-2, the possible responses to the question "How many more months do you think the U.S. economy will require to get out of a recession?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

86. Referring to Scenario 1-2, the possible responses to the question "How many out of every 10 U.S. voters do you think feel that the U.S. economy is in a good shape?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
EXPLANATION: The percentage of voters is the ratio of two discrete variables and, hence, the ratio is also a discrete variable.
KEYWORDS: discrete variable, types of data

87. Referring to Scenario 1-2, the possible responses to the question "How would you rate the condition of the U.S. economy with 1 = excellent, 2 = good, 3 = decent, 4 = poor, 5 = terrible?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy

88. Referring to Scenario 1-2, the possible responses to the question "Are you 1. Currently employed, 2. Unemployed but actively looking for job, 3. Unemployed and quit looking for job?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

89. Referring to Scenario 1-2, the possible responses to the question "In which year do you think the last recession in the U.S. started?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

90. Referring to Scenario 1-2, the possible responses to the question "On the scale of 1 to 100 with 1 being extremely anxious and 100 being total not anxious, rate your level of anxiety in this U.S. economy" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a

TYPE: MC DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

91. Referring to Scenario 1-2, the possible responses to the question "How satisfied are you with the U.S. economy today with 1 = very satisfied, 2 = moderately satisfied, 3 = neutral, 4 = moderately dissatisfied and 5 = very dissatisfied?" result in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: ratio scale, types of data
1-20 Defining and Collecting Data

92. Referring to Scenario 1-2, the possible responses to the question "How many people in your household are unemployed currently?" result in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: ordinal scale, types of data

93. Referring to Scenario 1-2, the possible responses to the question "What do you think is the current unemployment rate?" result in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: ratio scale, types of data

94. Referring to Scenario 1-2, the possible responses to the question "How many out of every 10 U.S. voters do you think feel that the U.S. economy is in a good shape?" result in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: ratio scale, types of data

95. Referring to Scenario 1-2, the possible responses to the question "How would you rate the condition of the U.S. economy with 1 = excellent, 2 = good, 3 = decent, 4 = poor, 5 = terrible?" result in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: ordinal scale, types of data

96. Referring to Scenario 1-2, the possible responses to the question "Are you 1. Currently employed, 2. Unemployed but actively looking for job, 3. Unemployed and quit looking for job?" result in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
a
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: nominal scale, types of data

97. Referring to Scenario 1-2, the possible responses to the question "In which year do you think the last recession in the U.S. started?" result in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
c
TYPE: MC DIFFICULTY: Difficult

KEYWORDS: interval scale, types of data
EXPLANATION: The calendar year does not have a true zero and, hence, is an interval scale variable.

98. Referring to Scenario 1-2, the possible responses to the question "On the scale of 1 to 100 with 1 being extremely anxious and 100 being totally not anxious, rate your level of anxiety in this U.S. economy?" results in
    a) a nominal scale variable.
    b) an ordinal scale variable.
    c) an interval scale variable.
    d) a ratio scale variable.

ANSWER:
c
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: interval scale, types of data

99. The universe or "totality of items or things" under consideration is called
    a) a sample.
    b) a population.
    c) a primary data source.
    d) a secondary data source.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: population

100. The portion of the universe that has been selected for analysis is called
    a) a sample.
    b) a frame.
    c) a primary data source.
    d) a secondary data source.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sample

101. Which of the following is most likely a population as opposed to a sample?
    a) respondents to a newspaper survey.
    b) the first 5 students completing an assignment.
    c) every third person to arrive at the bank.
    d) registered voters in a county.

ANSWER:
d

TYPE: MC DIFFICULTY: Moderate
KEYWORDS: population, sample

102. A study is under way in Yosemite National Forest to determine the adult height of American pine trees. Specifically, the study is attempting to determine what factors aid a tree in reaching heights greater than 60 feet tall. It is estimated that the forest contains 25,000 adult American pines. The study involves collecting heights from 250 randomly selected adult American pine trees and analyzing the results. Identify the population from which the study was sampled.
    a) The 250 randomly selected adult American pine trees.
    b) The 25,000 adult American pine trees in the forest.
    c) All the adult American pine trees taller than 60 feet.
    d) All American pine trees, of any age, in the forest.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: population, sample

103. A study is under way in Yosemite National Forest to determine the adult height of American pine trees. Specifically, the study is attempting to determine what factors aid a tree in reaching heights greater than 60 feet tall. It is estimated that the forest contains 25,000 adult American pines. The study involves collecting heights from 250 randomly selected adult American pine trees and analyzing the results. Identify the sample in the study.
    a) The 250 randomly selected adult American pine trees.
    b) The 25,000 adult American pine trees in the forest.
    c) All the adult American pine trees taller than 60 feet.
    d) All American pine trees, of any age, in the forest.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: population, sample

104. Most analysts focus on the cost of tuition as the way to measure the cost of a college education. But incidentals, such as textbook costs, are rarely considered. A researcher at Drummand University wishes to estimate the textbook costs of first-year students at Drummand. To do so, she monitored the textbook cost of 250 first-year students and found that their average textbook cost was $600 per semester. Identify the population of interest to the researcher.
    a) All Drummand University students.
    b) All college students.
    c) All first-year Drummand University students.
    d) The 250 students that were monitored.

ANSWER:
c

TYPE: MC DIFFICULTY: Easy
KEYWORDS: population, sample

105. Most analysts focus on the cost of tuition as the way to measure the cost of a college education. But incidentals, such as textbook costs, are rarely considered. A researcher at Drummand University wishes to estimate the textbook costs of first-year students at Drummand. To do so, she monitored the textbook cost of 250 first-year students and found that their average textbook cost was $600 per semester. Identify the sample in the study.
    a) All Drummand University students.
    b) All college students.
    c) All first-year Drummand University students.
    d) The 250 students that were monitored.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: population, sample

106. Researchers suspect that the average number of units earned per semester by college students is rising. A researcher at Calendula College wishes to estimate the number of units earned by students during the spring semester at Calendula. To do so, he randomly selects 100 student transcripts and records the number of units each student earned in the spring term. He found that the average number of semester units completed was 12.96 units per student. Identify the population of interest to the researcher.
    a) All Calendula College students.
    b) All college students.
    c) All Calendula College students enrolled in the spring.
    d) All college students enrolled in the spring.

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: population, sample

107. The manager of the customer service division of a major consumer electronics company is interested in determining whether the customers who have purchased a Blu-ray player made by the company over the past 12 months are satisfied with their products. The population of interest is
    a) all the customers who have bought a Blu-ray player made by the company over the past 12 months.
    b) all the customers who have bought a Blu-ray player made by the company and brought it in for repair over the past 12 months.
    c) all the customers who have used a Blu-ray player over the past 12 months.
    d) all the customers who have ever bought a Blu-ray player made by the company.

ANSWER:
a

TYPE: MC DIFFICULTY: Difficult
KEYWORDS: population

108. True or False: A population is the totality of items or things under consideration.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: population

109. True or False: A sample is the portion of the universe that is selected for analysis.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: sample

110. The Human Resources Director of a large corporation wishes to develop an employee benefits package and decides to select 500 employees from a list of all ($N = 40{,}000$) workers to study their preferences for the various components of a potential package. All the employees in the corporation constitute the _____.

ANSWER:
population
TYPE: FI DIFFICULTY: Easy
KEYWORDS: population

111. The Human Resources Director of a large corporation wishes to develop an employee benefits package and decides to select 500 employees from a list of all ($N = 40{,}000$) workers to study their preferences for the various components of a potential package. The 500 employees who will participate in this study constitute the _____.

ANSWER:
sample
TYPE: FI DIFFICULTY: Easy
KEYWORDS: sample

112. A summary measure that is computed to describe a characteristic from only a sample of the population is called
    a) an ordered array.
    b) a summary table.
    c) a statistic.
    d) a parameter.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: statistic

113. A summary measure that is computed to describe a characteristic of an entire population is called
    a) a parameter.
    b) an ordered array.
    c) a statistic.
    d) a summary table.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: parameter

114. Which of the following is most likely a parameter as opposed to a statistic?
    a) The average score of the first five students completing an assignment.
    b) The proportion of females registered to vote in a county.
    c) The average height of people randomly selected from a database.
    d) The proportion of trucks stopped yesterday that were cited for bad brakes.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: parameter, statistic

115. The chancellor of a major university was concerned about alcohol abuse on her campus and wanted to find out the proportion of students at her university who visited campus bars on the weekend before the final exam week. Her assistant took a random sample of 250 students and computed the portion of students in the sample who visited campus bars on the weekend before the final exam. The portion of all students at her university who visited campus bars on the weekend before the final exam week is an example of
    a) a categorical variable.
    b) a discrete variable.
    c) a parameter.
    d) a statistic.

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: parameter

116. The chancellor of a major university was concerned about alcohol abuse on her campus and wanted to find out the proportion of students at her university who visited campus bars on the weekend before the final exam week. Her assistant took a random sample of 250 students. The portion of students in the sample who visited campus bars on the weekend before the final exam week is an example of _____.
    a) a summary table.
    b) a categorical variable.
    c) a parameter.
    d) a statistic

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: statistic

117. True or False: A statistic is usually used to provide an estimate for a usually unobserved parameter.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: statistic, parameter, inferential statistics

118. True or False: A statistic is usually unobservable while a parameter is usually observable.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: statistic, parameter, inferential statistic

119. The Human Resources Director of a large corporation wishes to develop an employee benefits package and decides to select 500 employees from a list of all ($N = 40{,}000$) workers in order to study their preferences for the various components of a potential package. The Director will use the data from the sample to compute _____.

ANSWER:
statistics
TYPE: FI DIFFICULTY: Easy
KEYWORDS: statistic

120. The Human Resources Director of a large corporation wishes to develop an employee benefits package and decides to select 500 employees from a list of all ($N = 40{,}000$) workers in order to study their preferences for the various components of a potential package. Information obtained from the sample will be used to draw conclusions about the true population _____.

ANSWER:
parameters
TYPE: FI DIFFICULTY: Easy
KEYWORDS: parameter

121. The oranges grown in corporate farms in an agricultural state were damaged by some unknown fungi a few years ago. Suppose the manager of a large farm wanted to study the impact of the fungi on the orange crops daily over a 6-week period. On each day a random sample of orange trees was selected from within a random sample of acres. The daily average number of damaged oranges per tree and the proportion of trees having damaged oranges were calculated. The two main measures calculated each day (i.e., average number of damaged oranges per tree and proportion of trees having damaged oranges) are called _____.

ANSWER:
statistics
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: statistic

122. The oranges grown in corporate farms in an agricultural state were damaged by some unknown fungi a few years ago. Suppose the manager of a large farm wanted to study the impact of the fungi on the orange crops daily over a 6-week period. On each day a random sample of orange trees was selected from within a random sample of acres. The daily average number of damaged oranges per tree and the proportion of trees having damaged oranges were calculated. The two main measures calculated each day (i.e., average number of damaged oranges per tree and proportion of trees having damaged oranges) may be used daily to estimate the respective true population _____.

ANSWER:
parameters
TYPE: FI DIFFICULTY: Easy
KEYWORDS: parameters

123. The Quality Assurance Department of a large urban hospital is attempting to monitor and evaluate patient satisfaction with hospital services. Prior to discharge, a random sample of patients is asked to fill out a questionnaire to rate such services as medical care, nursing, therapy, laboratory, food, and cleaning. The Quality Assurance Department prepares weekly reports that are presented at the Board of Directors meetings and extraordinary/atypical ratings are easy to flag. Values computed from the sample results each week are called _____.

ANSWER:
statistics
TYPE: FI DIFFICULTY: Easy
KEYWORDS: statistic

124. The Quality Assurance Department of a large urban hospital is attempting to monitor and evaluate patient satisfaction with hospital services. Prior to discharge, a random sample of patients is asked to fill out a questionnaire to rate such services as medical care, nursing, therapy, laboratory, food, and cleaning. The Quality Assurance Department prepares weekly reports that are presented at the Board of Directors meetings and extraordinary/atypical ratings are easy to flag. True population characteristics estimated from the sample results each week are called _____.

ANSWER:
parameters
TYPE: FI DIFFICULTY: Easy
KEYWORDS: parameter

125. The Commissioner of Health in New York State wanted to study malpractice litigation in New York. A sample of 31 thousand medical records was drawn from a population of 2.7 million patients who were discharged during 2010. The proportion of malpractice claims filed from the sample of 31 thousand patients is a _____.

ANSWER:
statistic
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: statistic

126. The Commissioner of Health in New York State wanted to study malpractice litigation in New York. A sample of 31 thousand medical records was drawn from a population of 2.7 million patients who were discharged during 2010. The true proportion of malpractice claims filed from the population of 2.7 million patients is a _____.

ANSWER:
parameter
TYPE: FI DIFFICULTY: Easy
KEYWORDS: parameter

127. Jared was working on a project to look at global warming and accessed an Internet site where he captured average global surface temperatures from 1866. Which of the four methods of data collection was he using?
    a) Published sources
    b) Experimentation
    c) Surveying
    d) Observation

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data

128. The British Airways Internet site provides a questionnaire instrument that can be answered electronically. Which of the 4 methods of data collection is involved when people complete the questionnaire?
    a) Published sources
    b) Experimentation
    c) Surveying
    d) Observation

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data

129. A marketing research firm, in conducting a comparative taste test, provided three types of peanut butter to a sample of households randomly selected within the state. Which of the 4 methods of data collection is involved when people are asked to compare the three types of peanut butter?
    a) Published sources
    b) Experimentation
    c) Surveying
    d) Observation

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data

130. Tim was planning for a meeting with his boss to discuss a raise in his annual salary. In preparation, he wanted to use the Consumer Price Index to determine the percentage increase in his real (inflation-adjusted) salary over the last three years. Which of the 4 methods of data collection was involved when he used the Consumer Price Index?
    a) Published sources
    b) Experimentation
    c) Surveying
    d) Observation

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data

131. Which of the 4 methods of data collection is involved when a person counts the number of cars passing designated locations on the Los Angeles freeway system?
    a) Published sources
    b) Experimentation
    c) Surveying
    d) Observation

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: sources of data

132. A statistics student found a reference in the campus library that contained the median family incomes for all 50 states. She would report her data as being collected using
    a) a designed experiment.
    b) observational data.
    c) a random sample.
    d) a published source.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data
.

133. The personnel director at a large company studied the eating habits of the company's employees. The director noted whether employees brought their own lunches to work, ate at the company cafeteria, or went out to lunch. The goal of the study was to improve the food service at the company cafeteria. This type of data collection would best be considered as
    a) an observational study.
    b) a designed experiment.
    c) a random sample.
    d) a quota sample.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data

134. A study attempted to estimate the proportion of Florida residents who were willing to spend more tax dollars on protecting the beaches from environmental disasters. Twenty-five hundred Florida residents were surveyed. What type of data collection procedure was most likely used to collect the data for this study?
    a) A designed experiment
    b) A published source
    c) A random sample
    d) Observational data

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data

135. Which of the following is NOT a reason for the need for sampling?
    a) It is usually too costly to study the whole population.
    b) It is usually too time consuming to look at the whole population.
    c) It is sometimes destructive to observe the entire population.
    d) It is always more informative by investigating a sample than the entire population.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: reasons for sampling

136. Which of the following is NOT a reason for selecting a sample?
    a) A sample is less time consuming than a census.
    b) A sample is less costly to administer than a census.
    c) A sample is usually not a good representation of the target population.
    d) A sample is less cumbersome and more practical to administer.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: reasons for sampling

137. Which of the following sampling methods is a probability sample?
    a) Convenience sample
    b) Quota sample
    c) Stratified sample
    d) Judgment sample

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: probability sample

138. At US Data Corporation's web site, they advertised that "Because of our commitment to quality and our vast amount of industry knowledge and experience, we have grown to be one of America's leading providers of mailing lists, marketing data, sales leads and research data. We maintain databases of information on consumers and businesses nationwide that set industry standards for mission critical currency, reliability and accuracy." Trying to reach 500 potential donors for their annual phone donation campaign, a local fire department purchased a list of donors from the company. This list is an example of a
    a) stratified sample
    b) systematic sample
    c) judgment sample
    d) frame

ANSWER:
d

TYPE: MC DIFFICULTY: Easy
KEYWORDS: frame

139. The manager of the customer service division of a major consumer electronics company is interested in determining whether the customers who have purchased a Blu-ray player made by the company over the past 12 months are satisfied with their products. Which of the following will be a good frame for drawing a sample?
    a) Telephone directory.
    b) Voting registry.
    c) The list of customers who returned the registration card.
    d) A list of potential customers purchased from a database marketing company.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: frame

140. A sample of 300 subscribers to a magazine is selected from a population frame of 9,000 subscribers. If, upon examining the data, it is determined that no subscriber had been selected in the sample more than once,
    a) the sample could not have been random.
    b) the sample may have been selected without replacement or with replacement.
    c) the sample had to have been selected with replacement.
    d) the sample had to have been selected without replacement.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: sampling method, sampling with replacement, sampling without replacement

141. Which of the following scenarios will yield a nonprobability sample?
    a) The subjects of the sample are chosen based on known probability.
    b) Items or individuals are chosen without regard to their probability of occurrence.
    c) Every individual or item from the frame has an equal chance of being selected. Selection may be with replacement or without replacement.
    d) Decide on a sample size, n; divide the frame of N individuals into groups of k individuals where $k = N/n$; randomly select one individual from the first group; select every kth individual thereafter.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, nonprobability sample, sampling with replacement, sampling without replacement

142. To obtain a sample of 10 books in the store, the manager walked to the first shelf next to the cash register to pick the first 10 books on that shelf. This is an example of a
    a) systematic sample
    b) simple random sample
    c) stratified sample
    d) convenience sample

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, nonprobability sample, convenience sample

143. To demonstrate a sampling method, the instructor in a class picked the first 5 students sitting in the last row of the class. This is an example of a
    a) systematic sample
    b) simple random sample
    c) stratified sample
    d) convenience sample

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, nonprobability sample, convenience sample

144. A company selling apparel online sends out emails every Monday to all its customers who made a purchase. This is an example of a
    a) systematic sample
    b) convenience sample
    c) simple random sample
    d) stratified sample

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, nonprobability sample, convenience sample

145. To gather information on the preferences of instructors at universities on topics for a business statistics textbook that it will publish, a publishing company invited 10 faculty members who have adopted one of the textbooks that it has published. This is an example of a
    a) systematic sample
    b) judgment sample
    c) simple random sample
    d) stratified sample

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, nonprobability sample, judgment sample

146. To find out the potential impact of a new zoning law on a neighborhood, the legislators conduct a focus group interview by inviting the members of the housing owner's association of that neighborhood. This is an example of a
    a) systematic sample
    b) simple random sample
    c) judgment sample
    d) cluster sample

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, nonprobability sample, judgment sample

147. Which of the following yields a systematic sample?
    a) All students in a class are divided into groups of 15. One student is randomly chosen from the 1st group, the remaining observations are every 15th student thereafter.
    b) The best 15 students, according to the opinion of the instructor, in a class are selected.
    c) All students in a class are grouped according to their gender. A random sample of 8 is selected from the males and a separate random sample of 7 is drawn from the females.
    d) A random sample of 15 students is selected from a class without replacement.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, probability sample, systematic sample

148. Which of the following yields a stratified sample?
    a) All students in a class are divided into groups of 15. One student is randomly chosen from the 1st group, the remaining observations are every 15th student thereafter.
    b) The best 15 students, according to the opinion of the instructor, in a class are selected.
    c) All students in a class are grouped according to their gender. A random sample of 8 is selected from the males and a separate random sample of 7 is drawn from the females.
    d) The first 15 students in a class are selected without replacement.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, probability sample, stratified sample

149. Which of the following yields a cluster sample?
    a) All students in a class are divided into groups of 15. One student is randomly chosen from the 1st group, the remaining observations are every 15th student thereafter.
    b) The best 15 students, according to the opinion of the instructor, in a class are selected.
    c) All students in a class are grouped according to their gender. A random sample of 8 is selected from the males and a separate random sample of 7 is selected from the females.
    d) All students in a class are divided into groups according to the rows that they are seated. One of the groups is randomly selected.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, probability sample, cluster sample

150. Which of the following yields a simple random sample?
    a) All students in a class are divided into groups of 15. One student is randomly chosen from the 1st group, the remaining observations are every 15th student thereafter.
    b) The best 15 students, according to the opinion of the instructor, in a class are selected.
    c) The names of 50 students in a class are written on 50 different pieces of paper and put in a hat. The first 15 pieces of paper are selected blindly one at a time without replacing them back in the hat after shuffling the papers thoroughly.
    d) All students in a class are divided into groups according to the rows that they are seated. One of the groups is randomly selected.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, probability sample, simple random sample

151. Which of the following yields a simple random sample?
    a) All students in a class are grouped according to their gender. A random sample of 8 is selected from the males and a separate rando sample of 7 is drawn from the females.
    b) The best 15 students, according to the opinion of the instructor, in a class are selected.
    c) The names of 50 students in a class are written on 50 different pieces of paper and put in a hat. The first 15 pieces of paper are selected blindly one at a time after shuffling the papers thoroughly and each of the selected pieces is placed back into the hat before the next piece is selected.
    d) All students in a class are divided into groups according to the rows that they are seated. One of the groups is randomly selected.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, probability sample, simple random sample

152. For a population frame containing $N = 1{,}007$ individuals, what code number should you assign to the first person on the list to use a table of random numbers?
    a) 0
    b) 1
    c) 01
    d) 0001

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: random number

153. Which of the following types of samples can you use if you want to make valid statistical inferences from a sample to a population?
    a) A judgment sample
    b) A quota sample
    c) A convenience sample
    d) A probability sample

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: probability sample, sampling method

154. The evening host of a dinner dance reached into a bowl, mixed all the tickets around, and selected the ticket to award the grand door prize. What sampling method was used?
    a) Simple random sample
    b) Systematic sample
    c) Stratified sample
    d) Cluster sample

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: simple random sample, probability sample, sampling method

155. The Dean of Students mailed a survey to a total of 400 students. The sample included 100 students randomly selected from each of the freshman, sophomore, junior, and senior classes on campus last term. What sampling method was used?
    a) Simple random sample
    b) Systematic sample
    c) Stratified sample
    d) Cluster sample

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: stratified sample, probability sample, sampling method

156. A telemarketer set the company's computerized dialing system to contact every 25th person listed in the local telephone directory. What sampling method was used?
    a) Simple random sample
    b) Systematic sample
    c) Stratified sample
    d) Cluster sample

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: systematic sample, probability sample, sampling method

157. Since a _____ is not a randomly selected probability sample, there is no way to know how well it represents the overall population.
    a) Simple random sample
    b) Convenience sample
    c) Stratified sample
    d) Cluster sample

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: convenience sample, nonprobability sample, sampling method

158. A population frame for a survey contains a listing of 72,345 names. Using a table of random numbers, how many digits will the code numbers for each member of your population contain?
    a) 3
    b) 4
    c) 5
    d) 6

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: random number

159. A population frame for a survey contains a listing of 6,179 names. Using a table of random numbers, which of the following code numbers will appear on your list?
    a) 06
    b) 0694
    c) 6946
    d) 61790

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: random number

160. Which of the following can be reduced by proper interviewer training?
    a) Sampling error
    b) Measurement error
    c) Both above
    d) None of the above

ANSWER:
b
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: measurement error, survey worthiness

161. Which of the following sampling methods will more likely be susceptible to ethical violation?
    a) Simple random sample
    b) Cluster sample
    c) Convenience sample
    d) Stratified sample

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: ethical issues, sampling method

162. Which of the following sampling methods will more likely be susceptible to ethical violation when used to form conclusions about the entire population?
    a) Simple random sample
    b) Cluster sample
    c) Judgment sample
    d) Stratified sample

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: judgment sample, ethical issues, sampling method

163. Which of the following sampling methods will more likely be susceptible to ethical violation when used to form conclusions about the entire population?
    a) Simple random sample
    b) Cluster sample
    c) Systematic sample
    d) Convenience sample

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: convenience sample, ethical issues, sampling method

164. True or False: As a population becomes large, it is usually better to obtain statistical information from the entire population.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: population, sample, reasons for samplings

165. True or False: If a simple random sample is chosen with replacement, everyone has the same chance of selection on every selection.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: simple random sample, probability sample, sampling method, sampling with replacement, sampling without replacement

166. True or False: When dealing with human surveys, we are usually interested in sampling with replacement.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: sampling with replacement, sampling method, survey worthiness

167. True or False: The only reliable way a researcher can make statistical inferences from a sample to a population is to use nonprobability sampling methods.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: nonprobability, probability sample, sampling method

168. True or False: A sample is always a good representation of the target population.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: sample, population, sampling method

169. True or False: There can be only one sample selected from a population.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: sample, sampling method

170. True or False: Using different frames to generate data can lead to totally different conclusions.

ANSWER:
True
TYPE:TF DIFFICULTY: Easy
KEYWORDS: frame, sampling method

171. True or False: Sampling error can be eliminated by taking larger sample sizes.

ANSWER:
False
TYPE: TF DIFFICULTY: Difficult
KEYWORDS: sampling error

172. True or False: Sampling error can be reduced by taking larger sample sizes.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: sampling error

173. True or False: A convenience sample is a type of probability sample.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: convenience sample

174. True or False: Items or individuals in a judgment sample are chosen according to their probability of occurrence.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: judgment sample, nonprobability sample

175. True or False: When participants can self-select into the sample, you have a nonprobability sample.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: nonprobability sample

176. True or False: Systematic samples are less efficient than a stratified sample.

ANSWER:
True

TYPE: TF DIFFICULTY: Easy
KEYWORDS: systematic sample, stratified sample

177. True or False: The professor of a business statistics class wanted to find out the mean amount of time per week her students spent studying for the class. Among the 50 students in her class, 20% were freshmen, 50% were sophomores and 30% were juniors. She decided to select 2 students randomly from the freshmen, 5 randomly from the sophomores and 3 randomly from the juniors. This is an example of a systematic sample.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: stratified sample

178. To estimate the mean number of hours a student at a major university spent in the library, a researcher obtained the list of students from the registrar's office, from which she can select a random sample of 200 students. This list is a _____.

ANSWER:
frame
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frame

179. _____results from the exclusion of certain groups of subjects from a population frame.

ANSWER:
Coverage error
TYPE: FI DIFFICULTY: Difficult
KEYWORDS: coverage error, survey worthiness, frame

180. Coverage error results in a _____.

ANSWER:
selection bias
TYPE: FI DIFFICULTY: Difficult
KEYWORDS: selection bias, survey worthiness

181. _____results from the failure to collect data on all subjects in the sample.

ANSWER:
Nonresponse error or bias
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: nonresponse error, survey worthiness

182. The sampling process begins by locating appropriate data sources called _____.

ANSWER:
frames

TYPE: FI DIFFICULTY: Easy
KEYWORDS: frames, sampling method

183. True or False: If you randomly select a student from the first row of a business statistics class and then every other fifth student thereafter until you get a sample of 20 students, this is an example of a convenience sample.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: chunk sample

184. True or False: You stand at the main entrance to a departmental store and pick the first 20 customers that enter the store after it has opened its door for business on a single day. This is an example of a systematic sample.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: systematic sample

185. True or False: An electronic appliance chain gathered customer opinions on their services using the customer feedback forms that are attached to the product registration forms. This is an example of a convenience sample.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: convenience sample

186. True or False: To gather opinions on the efficacy of U.S. foreign policies, a sample of 50 faculty members is selected from the pool of university professors who have taught political science at the graduate level. This is an example of a judgment sample.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: judgment sample

187. True or False: In business statistics class students sit randomly without preferences. A sample is selected by including everybody who sits in the first row. This is an example of a cluster sample.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: cluster sample

188. True or False: The question "How many times have you abused illicit drugs in the last 6 months?" will most likely result in nonresponse error.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: nonresponse error, survey worthiness

189. True or False: The question "Is your household income last year somewhere between $50,000 and $100,000?" will most likely result in coverage error.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: coverage error, survey worthiness

190. True or False: The only way one can eliminate sampling error is to take the whole population as the sample.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: sampling error, survey worthiness

191. True or False: Coverage error can become an ethical issue if a group is intentionally excluded from the frame.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ethical issue, coverage error, survey worthiness, frame

192. True or False: Measurement error will become an ethical issue when the findings are presented without reference to sample size and margin of error.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ethical issue, measurement error, sampling error, survey worthiness

193. True or False: Measurement error can become an ethical issue when a survey sponsor chooses leading questions that guide the responses in a direction.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ethical issue, measurement error, survey worthiness

194. True or False: Measurement error can become an ethical issue when an interviewer purposely guides the responses in a direction.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ethical issue, measurement error, survey worthiness

195. True or False: Sampling error becomes an ethical issue if the findings are purposely presented without reference to sample size and margin of error so that the sponsor can promote a viewpoint that might otherwise be truly insignificant.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ethical issue, sampling error, survey worthiness

196. True or False: The professor of a business statistics class wanted to find out the mean amount of time per week her students spent studying for the class. She divided the students into the left, right and center groups according to the location they sat in the class that day. One of these 3 groups was randomly selected and everyone in the group was asked the mean amount of time per week he/she spent studying for the class. This is an example of a cluster sample.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: cluster sample

197. True or False: The professor of a business statistics class wanted to find out the mean amount of time per week her students spent studying for the class. She divided the fifty students on her roster into ten groups starting from the first student on the roster. The first student was randomly selected from the first group. Then every tenth student was selected from the remaining students. This is an example of a cluster sample.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: systematic sample

198. True or False: Selection bias occurs more frequently in systematic samples than in simple random samples.

ANSWER:
True
TYPE: TF DIFFICULTY: easy
KEYWORDS: simple random sample, systematic sample

199. True or False: The question: "Have you used any form of illicit drugs over the past 2 months?" will most likely result in measurement error if the question is answered.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: measurement error, survey worthiness

200. True or False: The question: "How much did you earn last year rounded to the nearest hundreds of dollars?" will most likely result in measurement error.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: measurement error, survey worthiness

SCENARIO 1-3
The manager of the customer service division of a major consumer electronics company is interested in determining whether the customers who have purchased a Blu-ray player made by the company over the past 12 months are satisfied with their products.

201. Referring to Scenario 1-3, the manager decides to ask a sample of customers, who have bought a Blu-ray player made by the company and filed a complaint over the past year, to fill in a survey about whether they are satisfied with the product. This method will most likely suffer from
    a) nonresponse error.
    b) measurement error.
    c) coverage error.
    d) non-probability sampling.

ANSWER:
c
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: coverage error, survey worthiness

202. Referring to Scenario 1-3, if there are 4 different brands of Blu-ray players made by the company, the best sampling strategy would be to use a
    a) a simple random sample.
    b) a stratified sample.
    c) a cluster sample.
    d) a systematic sample.

ANSWER:
b
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: stratified sample, probability sample, sampling method

203. Referring to Scenario 1-3, which of the following questions in the survey will NOT likely induce a measurement error?
    a) How many times have you illegally copied copyrighted sporting events?
    b) What is your exact annual income?
    c) How many times have you brought the Blu-ray player back for service?
    d) How many times have you failed to set the time on the Blu-ray player?

ANSWER:
c
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: measurement error, survey worthiness

204. Referring to Scenario 1-3, if a customer survey questionnaire is included in all the Blu-ray players made and sold by the company over the past 12 months, this method of collecting data will most like suffer from
    a) nonresponse error.
    b) measurement error.
    c) coverage error.
    d) nonprobability sampling.

ANSWER:
a
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: nonresponse error, survey worthiness

205. If Excel discovers a column containing numbers, it treats the column as a ____ _____.

ANSWER:
Numeric variable
TYPE: FI DIFFICULTY: Easy
KEYWORDS: Classifying variables by type

206. If Excel discovers a column containing words or alphanumeric data, it treats the column as a ____ _____ _____.

ANSWER:
Non-numerical or categorical variable
TYPE: FI DIFFICULTY: Easy
KEYWORDS: Classifying variables by type

207. For selecting a random number between 1 and 50, the Excel function to be used is _____.

ANSWER: =RANDBETWEEN(1,50)
TYPE: FI DIFFICULTY: Easy
KEYWORDS: EG1.3 Types of Sampling Methods

Chapter 2: Organizing and Visualizing Variables

SCENARIO 2-1
An insurance company evaluates many numerical variables about a person before deciding on an appropriate rate for automobile insurance. A representative from a local insurance agency selected a random sample of insured drivers and recorded, *X,* the number of claims each made in the last 3 years, and *f* is the number of supervising officers for each *X,* with the following results:

X	*f*
1	14
2	18
3	12
4	5
5	1

1. Referring to Scenario 2-1, how many drivers are represented in the sample?
   a) 5
   b) 15
   c) 18
   d) 50

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: frequency distribution

2. Referring to Scenario 2-1, how many total claims are represented in the sample?
   a) 15
   b) 50
   c) 111
   d) 250

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: interpretation, frequency distribution

3. A type of vertical bar chart in which the categories are plotted in the descending rank order of the magnitude of their frequencies is called a
   a) contingency table.
   b) Pareto chart.
   c) stem-and-leaf display.
   d) pie chart.

ANSWER:
b

TYPE: MC DIFFICULTY: Easy
KEYWORDS: Pareto chart

SCENARIO 2-2
At a meeting of information systems officers for regional offices of a national company, a survey was taken to determine the number of employees the officers supervise in the operation of their departments, where *X* is the number of employees overseen by each information systems officer and *f* is the number of officers for each *X*.

X	*f*
1	7
2	5
3	11
4	8
5	9

4. Referring to Scenario 2-2, how many regional offices are represented in the survey results?
   a) 5
   b) 11
   c) 15
   d) 40

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: interpretation, frequency distribution

5. Referring to Scenario 2-2, across all the regional offices, how many total employees were supervised by those surveyed?
   a) 15
   b) 40
   c) 127
   d) 200

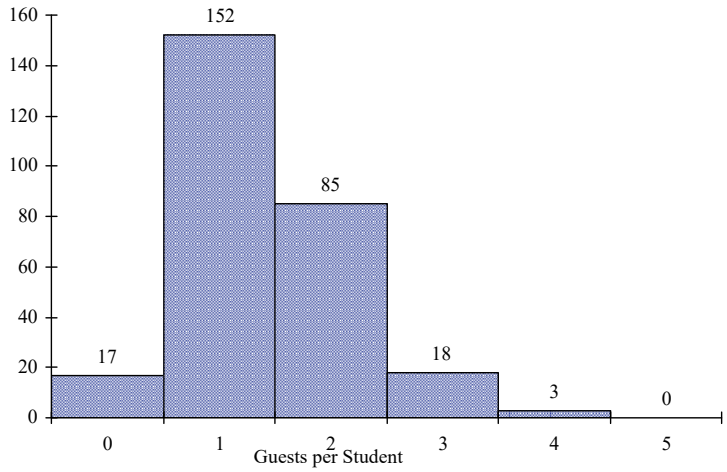
ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: interpretation, frequency distribution

6. The width of each bar in a histogram corresponds to the
   a) differences between the boundaries of the class.
   b) number of observations in each class.
   c) midpoint of each class.
   d) percentage of observations in each class.

ANSWER:
a

TYPE: MC DIFFICULTY: Easy
KEYWORDS: histogram

SCENARIO 2-3
Every spring semester, the School of Business coordinates a luncheon with local business leaders for graduating seniors, their families, and friends. Corporate sponsorship pays for the lunches of each of the seniors, but students must purchase tickets to cover the cost of lunches served to guests they bring with them. The following histogram represents the attendance at the senior luncheon, where *X* is the number of guests each graduating senior invited to the luncheon and *f* is the number of graduating seniors in each category.



7. Referring to the histogram from Scenario 2-3, how many graduating seniors attended the luncheon?
   a) 4
   b) 152
   c) 275
   d) 388

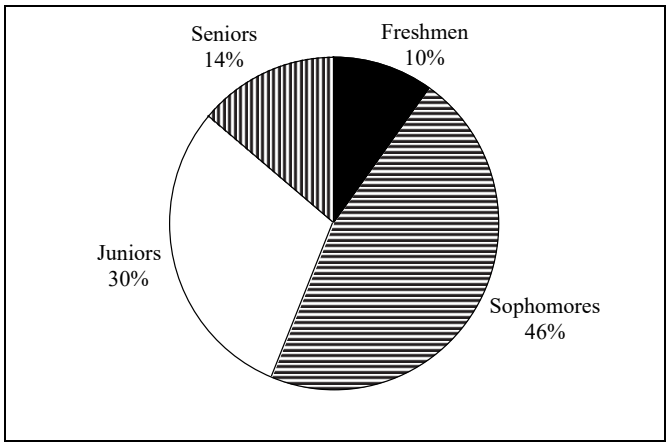
ANSWER:
c
TYPE: MC DIFFICULTY: Difficult
EXPLANATION: The number of graduating seniors is the sum of all the frequencies, *f*.
KEYWORDS: interpretation, histogram

8. Referring to the histogram from Scenario 2-3, if all the tickets purchased were used, how many guests attended the luncheon?
   a) 4
   b) 152
   c) 275
   d) 388

ANSWER:
d

TYPE: MC DIFFICULTY: Difficult
EXPLANATION: The total number of guests is $\sum_{i=1}^{6} X_i f_i$
KEYWORDS: interpretation, histogram

9. A professor of economics at a small Texas university wanted to determine what year in school students were taking his tough economics course. Shown below is a pie chart of the results. What percentage of the class took the course prior to reaching their senior year?



a) 14%
b) 44%
c) 54%
d) 86%

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: interpretation, pie chart

10. When polygons or histograms are constructed, which axis must show the true zero or "origin"?
    a) The horizontal axis.
    b) The vertical axis.
    c) Both the horizontal and vertical axes.
    d) Neither the horizontal nor the vertical axis.

ANSWER:
b- Origin is at intersection of the Y axes.
TYPE: MC DIFFICULTY: Easy
KEYWORDS: polygon, histogram

11. When constructing charts, the following is plotted at the class midpoints:
    a) frequency histograms.
    b) percentage polygons.
    c) cumulative percentage polygon (ogives).
    d) All of the above.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: percentage polygon

SCENARIO 2-4
A survey was conducted to determine how people rated the quality of programming available on television. Respondents were asked to rate the overall quality from 0 (no quality at all) to 100 (extremely good quality). The stem-and-leaf display of the data is shown below.

Stem	Leaves
3	24
4	03478999
5	0112345
6	12566
7	01
8	
9	2

12. Referring to Scenario 2-4, what percentage of the respondents rated overall television quality with a rating of 80 or above?
    a) 0
    b) 4
    c) 96
    d) 100

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, interpretation

13. Referring to Scenario 2-4, what percentage of the respondents rated overall television quality with a rating of 50 or below?
    a) 11
    b) 40
    c) 44
    d) 56

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

14. Referring to Scenario 2-4, what percentage of the respondents rated overall television quality with a rating from 50 through 75?
    a) 11
    b) 40
    c) 44
    d) 56

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

SCENARIO 2-5
The following are the duration in minutes of a sample of long-distance phone calls made within the continental United States reported by one long-distance carrier.

Time (in Minutes)	Relative Frequency
0 but less than 5	0.37
5 but less than 10	0.22
10 but less than 15	0.15
15 but less than 20	0.10
20 but less than 25	0.07
25 but less than 30	0.07
30 or more	0.02

15. Referring to Scenario 2-5, what is the width of each class?
    a) 1 minute
    b) 5 minutes
    c) 2%
    d) 100%

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: class interval, relative frequency distribution

16. Referring to Scenario 2-5, if 1,000 calls were randomly sampled, how many calls lasted under 10 minutes?
    a) 220
    b) 370
    c) 410
    d) 590

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, interpretation

17. Referring to Scenario 2-5, if 100 calls were randomly sampled, how many calls lasted 15 minutes or longer?
    a) 10
    b) 14
    c) 26
    d) 74

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, interpretation

18. Referring to Scenario 2-5, if 10 calls lasted 30 minutes or more, how many calls lasted less than 5 minutes?
    a) 10
    b) 185
    c) 295
    d) 500

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, interpretation

19. Referring to Scenario 2-5, what is the cumulative relative frequency for the percentage of calls that lasted under 20 minutes?
    a) 0.10
    b) 0.59
    c) 0.76
    d) 0.84

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: cumulative relative frequency

20. Referring to Scenario 2-5, what is the cumulative relative frequency for the percentage of calls that lasted 10 minutes or more?
    a) 0.16
    b) 0.24
    c) 0.41
    d) 0.90

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: cumulative relative frequency

21. Referring to Scenario 2-5, if 100 calls were randomly sampled, _____ of them would have lasted at least 15 minutes but less than 20 minutes
    a) 6
    b) 8
    c) 10
    d) 16

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: relative frequency distribution, interpretation

22. Referring to Scenario 2-5, if 100 calls were sampled, _____ of them would have lasted less than 15 minutes.
    a) 26
    b) 74
    c) 10
    d) None of the above.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, interpretation

23. Referring to Scenario 2-5, if 100 calls were sampled, _____of them would have lasted 20 minutes or more.
    a) 26
    b) 16
    c) 74
    d) None of the above.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, interpretation

24. Referring to Scenario 2-5, if 100 calls were sampled, _____ of them would have lasted less than 5 minutes or at least 30 minutes or more.
    a) 35
    b) 37
    c) 39
    d) None of the above.

ANSWER:
c
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: relative frequency distribution, interpretation

25. Which of the following is appropriate for displaying data collected on the different brands of cars students at a major university drive?
    a) A Pareto chart
    b) A two-way classification table
    c) A histogram
    d) A scatter plot

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: Pareto diagram

26. One of the developing countries is experiencing a baby boom, with the number of births rising for the fifth year in a row, according to a BBC News report. Which of the following is best for displaying this data?
    a) A Pareto chart
    b) A two-way classification table
    c) A histogram
    d) A time-series plot

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: time-series plot

27. When studying the simultaneous responses to two categorical questions, you should set up a
    a) contingency table.
    b) frequency distribution table.
    c) cumulative percentage distribution table.
    d) histogram.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: contingency table

28. Data on 1,500 students' height were collected at a larger university in the East Coast. Which of the following is the best chart for presenting the information?
    a) A pie chart.
    b) A Pareto chart.
    c) A side-by-side bar chart.
    d) A histogram.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, histogram

29. Data on the number of part-time hours students at a public university worked in a week were collected. Which of the following is the best chart for presenting the information?
    a) A pie chart.
    b) A Pareto chart.
    c) A percentage table.
    d) A percentage polygon.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, percentage polygon

30. Data on the number of credit hours of 20,000 students at a public university enrolled in a Spring semester were collected. Which of the following is the best for presenting the information?
    a) A pie chart.
    b) A Pareto chart.
    c) A stem-and-leaf display.
    d) A contingency table.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, stem-and-leaf

31. A survey of 150 executives were asked what they think is the most common mistake candidates make during job interviews. Six different mistakes were given. Which of the following is the best for presenting the information?
    a) A bar chart.
    b) A histogram
    c) A stem-and-leaf display.
    d) A contingency table.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, bar chart

32. You have collected information on the market share of 5 different search engines used by U.S. Internet users in a quarter. Which of the following is the best for presenting the information?
    a) A pie chart.
    b) A histogram
    c) A stem-and-leaf display.
    d) A contingency table.

ANSWER:
a

TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, pie chart

33. You have collected information on the consumption by the 15 largest coffee-consuming nations. Which of the following is the best for presenting the shares of the consumption?
    a) A pie chart.
    b) A Pareto chart
    c) A side-by-side bar chart.
    d) A contingency table.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: choice of chart, Pareto chart
NOTE: Even though a pie chart can also be used, the Pareto chart is preferable for separating the "vital few" from the "trivial many".

34. You have collected data on the approximate retail price (in $) and the energy cost per year (in $) of 15 refrigerators. Which of the following is the best for presenting the data?
    a) A pie chart.
    b) A scatter plot
    c) A side-by-side bar chart.
    d) A contingency table.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, scatter plot

35. You have collected data on the number of U.S. households actively using online banking and/or online bill payment over a 10-year period. Which of the following is the best for presenting the data?
    a) A pie chart.
    b) A stem-and-leaf display
    c) A side-by-side bar chart.
    d) A time-series plot.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, time-series plot

36. You have collected data on the monthly seasonally adjusted civilian unemployment rate for the United States over a 10-year period. Which of the following is the best for presenting the data?
    a) A contingency table.
    b) A stem-and-leaf display
    c) A time-series plot.
    d) A side-by-side bar chart.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: choice of chart, time-series plot

37. You have collected data on the number of complaints for 6 different brands of automobiles sold in the US over a 10-year period. Which of the following is the best for presenting the data?
    a) A contingency table.
    b) A stem-and-leaf display
    c) A time-series plot.
    d) A side-by-side bar chart.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: choice of chart, side-by-side bar chart

38. You have collected data on the responses to two questions asked in a survey of 40 college students majoring in business—What is your gender (Male = M; Female = F) and What is your major (Accountancy = A; Computer Information Systems = C; Marketing = M). Which of the following is the best for presenting the data?
    a) A contingency table.
    b) A stem-and-leaf display
    c) A time-series plot.
    d) A Pareto chart.

ANSWER:
a
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: choice of chart, contingency table

SCENARIO 2-6
A sample of 200 students at a Big-Ten university was taken after the midterm to ask them whether they went bar hopping the weekend before the midterm or spent the weekend studying, and whether they did well or poorly on the midterm. The following table contains the result.

	Did Well in Midterm	Did Poorly in Midterm
Studying for Exam	80	20
Went Bar Hopping	30	70

39. Referring to Scenario 2-6, of those who went bar hopping the weekend before the midterm in the sample, _____ percent of them did well on the midterm.
    a) 15
    b) 27.27
    c) 30
    d) 55

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: contingency table, interpretation

40. Referring to Scenario 2-6, of those who did well on the midterm in the sample, _____ percent of them went bar hopping the weekend before the midterm.
    a) 15
    b) 27.27
    c) 30
    d) 50

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: contingency table, interpretation

41. Referring to Scenario 2-6, _____ percent of the students in the sample went bar hopping the weekend before the midterm and did well on the midterm.
    a) 15
    b) 27.27
    c) 30
    d) 50

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: contingency table, interpretation

42. Referring to Scenario 2-6, _____ percent of the students in the sample spent the weekend studying and did well on the midterm.
    a) 40
    b) 50
    c) 72.72
    d) 80

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: contingency table, interpretation

43. Referring to Scenario 2-6, if the sample is a good representation of the population, we can expect _____ percent of the students in the population to spend the weekend studying and do poorly on the midterm.
    a) 10
    b) 20
    c) 45
    d) 50

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: contingency table, interpretation

44. Referring to Scenario 2-6, if the sample is a good representation of the population, we can expect _____ percent of those who spent the weekend studying to do poorly on the midterm.
    a) 10
    b) 20
    c) 45
    d) 50

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: contingency table, interpretation

45. Referring to Scenario 2-6, if the sample is a good representation of the population, we can expect _____ percent of those who did poorly on the midterm to have spent the weekend studying.
    a) 10
    b) 22.22
    c) 45
    d) 50

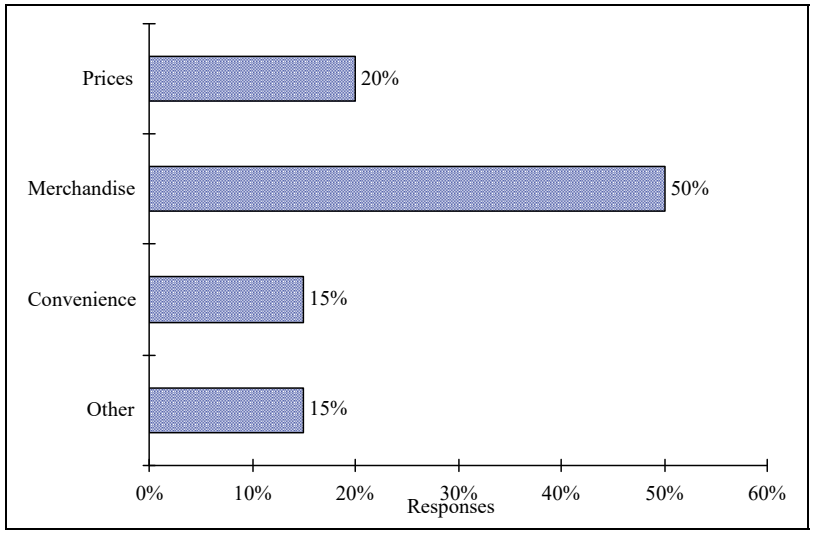
ANSWER:
b

TYPE: MC DIFFICULTY: Moderate.
KEYWORDS: contingency table, interpretation

46. In a contingency table, the number of rows and columns
    a) must always be the same.
    b) must always be 2.
    c) must add to 100%.
    d) None of the above.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: contingency table

47. Retailers are always interested in determining why a customer selected their store to make a purchase. A sporting goods retailer conducted a customer survey to determine why its customers shopped at the store. The results are shown in the bar chart below. What proportion of the customers responded that they shopped at the store because of the merchandise or the convenience?



    a) 35%
    b) 50%
    c) 65%
    d) 85%

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: bar chart, interpretation

SCENARIO 2-7
The Stem-and-Leaf display below contains data on the number of months between the date a civil suit is filed and when the case is actually adjudicated for 50 cases heard in superior court.

Stem	Leaves
1	2 3 4 4 4 7 8 9 9
2	2 2 2 2 3 4 5 5 6 7 8 8 8 9
3	0 0 1 1 1 3 5 7 7 8
4	0 2 3 4 5 5 7 9
5	1 1 2 4 6 6
6	1 5 8

48. Referring to Scenario 2-7, locate the first leaf, i.e., the lowest valued leaf with the lowest valued stem. This represents a wait of _____ months.

ANSWER:
12
TYPE: FI DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, interpretation

49. Referring to Scenario 2-7, the civil suit with the longest wait between when the suit was filed and when it was adjudicated had a wait of _____ months.

ANSWER:
68
TYPE: FI DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, interpretation

50. Referring to Scenario 2-7, the civil suit with the fourth shortest waiting time between when the suit was filed and when it was adjudicated had a wait of _____ months.

ANSWER:
14
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

51. Referring to Scenario 2-7, _____ percent of the cases were adjudicated within the first 2 years.

ANSWER:
30
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

52. Referring to Scenario 2-7, _____ percent of the cases were not adjudicated within the first 4 years.

ANSWER:
20

TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

53. Referring to Scenario 2-7, if a frequency distribution with equal sized classes was made from this data, and the first class was "10 but less than 20," the frequency of that class would be _____.

ANSWER:
9
TYPE: FI DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, interpretation

54. Referring to Scenario 2-7, if a frequency distribution with equal sized classes was made from this data, and the first class was "10 but less than 20," the relative frequency of the third class would be _____.

ANSWER:
0.20 or 20% or 10/50
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution

55. Referring to Scenario 2-7, if a frequency distribution with equal sized classes was made from this data, and the first class was "10 but less than 20," the cumulative percentage of the second class would be _____.

ANSWER:
46% or 0.46 or 23/50
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: cumulative percentage distribution

SCENARIO 2-8
The Stem-and-Leaf display represents the number of times in a year that a random sample of 100 "lifetime" members of a health club actually visited the facility.

Stem	Leaves
0	012222233333344566666667789999
1	1111222234444455669999
2	00011223455556889
3	0000446799
4	011345567
5	0077
6	8
7	67
8	3
9	0247

56. Referring to Scenario 2-8, the person who has the largest leaf associated with the smallest stem visited the facility _____ times.

ANSWER:
9
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

57. Referring to Scenario 2-8, the person who visited the health club less than anyone else in the sample visited the facility _____ times.

ANSWER:
0 or no
TYPE: FI DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, interpretation

58. Referring to Scenario 2-8, the person who visited the health club more than anyone else in the sample visited the facility _____ times.

ANSWER:
97
TYPE: FI DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, interpretation

59. Referring to Scenario 2-8, _____ of the 100 members visited the health club at least 52 times in a year.

ANSWER:
10
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

60. Referring to Scenario 2-8, _____ of the 100 members visited the health club no more than 12 times in a year.

ANSWER:
38
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, interpretation

61. Referring to Scenario 2-8, if a frequency distribution with equal sized classes was made from this data, and the first class was "0 but less than 10," the frequency of the fifth class would be _____.

ANSWER:
9
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, frequency distribution

62. Referring to Scenario 2-8, if a frequency distribution with equal sized classes was made from this data, and the first class was "0 but less than 10," the relative frequency of the last class would be _____.

ANSWER:
4% or 0.04 or 4/100
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, relative frequency distribution

63. Referring to Scenario 2-8, if a frequency distribution with equal sized classes was made from this data, and the first class was "0 but less than 10," the cumulative percentage of the next-to-last class would be _____.

ANSWER:
96% or 0.96 or 96/100
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, cumulative percentage distribution

64. Referring to Scenario 2-8, if a frequency distribution with equal sized classes was made from this data, and the first class was "0 but less than 10," the class midpoint of the third class would be _____.

ANSWER:
25 or (20+30)/2
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: stem-and-leaf display, class midpoint

SCENARIO 2-9
The frequency distribution below represents the rents of 250 randomly selected federally subsidized apartments in a small town.

Rent in $	Frequency
1,100 but less than 1,200	113
1,200 but less than 1,300	85
1,300 but less than 1,400	32
1,400 but less than 1,500	16
1,500 but less than 1,600	4

65. Referring to Scenario 2-9, _____ apartments rented for at least $1,200 but less than $1,400.

ANSWER:
117
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution

66. Referring to Scenario 2-9, _____ percent of the apartments rented for $1,400 or more.

ANSWER:
8% or 20/250
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution, cumulative percentage distribution

67. Referring to Scenario 2-9, _____ percent of the apartments rented for at least $1,300.

ANSWER:
20.8% or 52/250
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: frequency distribution, cumulative percentage distribution

68. Referring to Scenario 2-9, the class midpoint of the second class is _____.

ANSWER:
1,250
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution, class midpoint

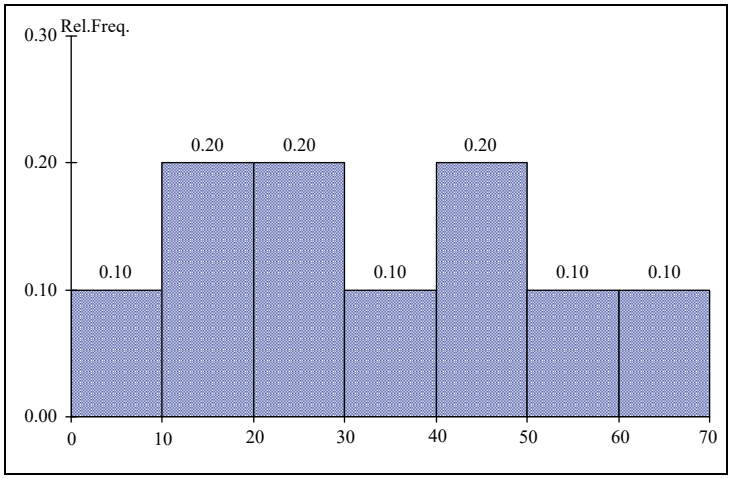
69. Referring to Scenario 2-9, the relative frequency of the second class is _____.

ANSWER:
85/250 or 17/50 or 34% or 0.34
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution, relative frequency distribution

70. Referring to Scenario 2-9, the percentage of apartments renting for less than $1,400 is _____.

ANSWER:
230/250 or 23/25 or 92% or 0.92
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: frequency distribution, cumulative percentage distribution

SCENARIO 2-10
The histogram below represents scores achieved by 200 job applicants on a personality profile.



71. Referring to the histogram from Scenario 2-10, _____ percent of the job applicants scored between 10 and 20.

ANSWER:
20%
TYPE: FI DIFFICULTY: Easy
KEYWORDS: histogram, percentage distribution

72. Referring to the histogram from Scenario 2-10, _____ percent of the job applicants scored below 50.

ANSWER:
80%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram, percentage distribution

73. Referring to the histogram from Scenario 2-10, the number of job applicants who scored between 30 and below 60 is _____.

ANSWER:
80
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram

74. Referring to the histogram from Scenario 2-10, the number of job applicants who scored 50 or above is _____.

ANSWER:
40
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram

75. Referring to the histogram from Scenario 2-10, 90% of the job applicants scored above or equal to _____.

ANSWER:
10
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram, cumulative percentage distribution

76. Referring to the histogram from Scenario 2-10, half of the job applicants scored below _____.

ANSWER:
30
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram, cumulative percentage distribution

77. Referring to the histogram from Scenario 2-10, _____ percent of the applicants scored below 20 or at least 50.

ANSWER:
50%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram, cumulative percentage distribution

78. Referring to the histogram from Scenario 2-10, _____ percent of the applicants scored between 20 and below 50.

ANSWER:
50%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: histogram, cumulative percentage distribution

SCENARIO 2-11
The ordered array below resulted from selecting a sample of 25 batches of 500 computer chips and determining how many in each batch were defective.

Defects

1	2	4	4	5	5	6	7	9	9	12	12	15
17	20	21	23	23	25	26	27	27	28	29	29	

79. Referring to Scenario 2-11, if a frequency distribution for the defects data is constructed, using "0 but less than 5" as the first class, the frequency of the “20 but less than 25” class would be _____.

ANSWER:
4
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution

80. Referring to Scenario 2-11, if a frequency distribution for the defects data is constructed, using "0 but less than 5" as the first class, the relative frequency of the “15 but less than 20” class would be _____.

ANSWER:
0.08 or 8% or 2/25
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution

81. Referring to Scenario 2-11, construct a frequency distribution for the defects data, using "0 but less than 5" as the first class.

ANSWER:

Defects	Frequency
0 but less than 5	4
5 but less than 10	6
10 but less than 15	2
15 but less than 20	2
20 but less than 25	4
25 but less than 30	7

TYPE: PR DIFFICULTY: Easy
KEYWORDS: frequency distribution

82. Referring to Scenario 2-11, construct a relative frequency or percentage distribution for the defects data, using "0 but less than 5" as the first class.

ANSWER:

Defects	Percentage
0 but less than 5	16
5 but less than 10	24
10 but less than 15	8
15 but less than 20	8
20 but less than 25	16
25 but less than 30	28

TYPE: PR DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, percentage distribution

83. Referring to Scenario 2-11, construct a cumulative percentage distribution for the defects data if the corresponding frequency distribution uses "0 but less than 5" as the first class.

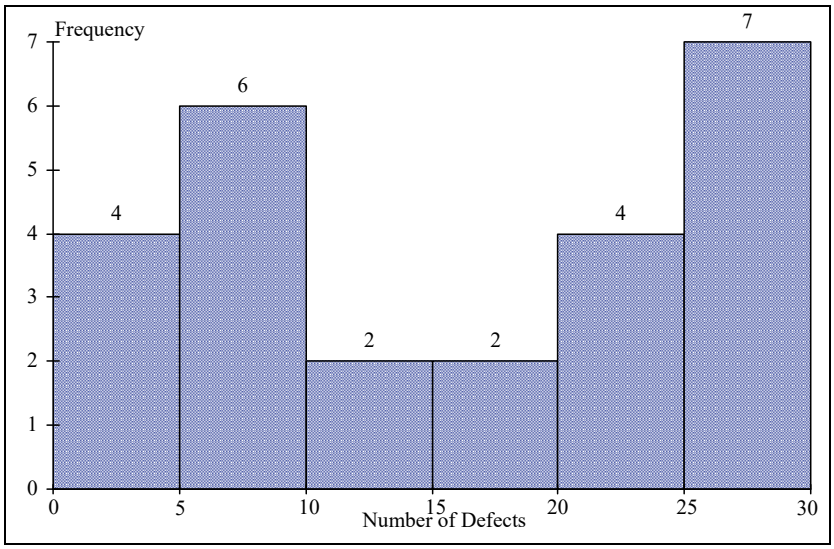
ANSWER:

Defects	CumPct
0	0
5	16
10	40
15	48
20	56
25	72
30	100

TYPE: PR DIFFICULTY: Moderate
KEYWORDS: cumulative percentage distribution

84. Referring to Scenario 2-11, construct a histogram for the defects data, using "0 but less than 5" as the first class.

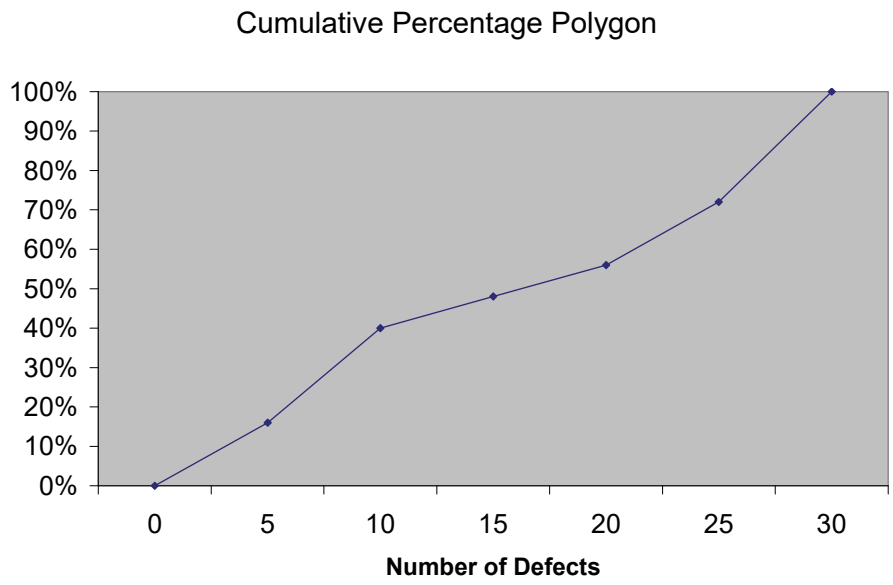
ANSWER:



TYPE: PR DIFFICULTY: Easy
KEYWORDS: histogram, frequency distribution

85. Referring to Scenario 2-11, construct a cumulative percentage polygon for the defects data if the corresponding frequency distribution uses "0 but less than 5" as the first class.

ANSWER:



TYPE: PR DIFFICULTY: Moderate
KEYWORDS: cumulative percentage polygon

86. The point halfway between the boundaries of each class interval in a grouped frequency distribution is called the _____.

ANSWER:
class midpoint
TYPE: FI DIFFICULTY: Easy
KEYWORDS: cumulative percentage polygon, frequency distribution

87. A _____ is a vertical bar chart in which the rectangular bars are constructed at the boundaries of each class interval.

ANSWER:
histogram
TYPE: FI DIFFICULTY: Easy
KEYWORDS: histogram

88. It is essential that each class grouping or interval in a frequency distribution be _____ and _____.

ANSWER:
non-overlapping and of equal width
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: frequency distribution, class interval

89. To compare one large set of numerical data to another, a _____ distribution must be developed from the frequency distribution.

ANSWER:
relative frequency or percentage
TYPE: FI DIFFICULTY: Easy
KEYWORDS: relative frequency distribution, percentage distribution

90. When comparing two or more large sets of numerical data, the distributions being developed should use the same _____.

ANSWER:
class boundaries.
TYPE: FI DIFFICULTY: Easy
KEYWORDS: class boundaries

91. The width of each class grouping or interval in a frequency distribution should be _____.

ANSWER:
the same or equal
TYPE: FI DIFFICULTY: Easy
KEYWORDS: class interval, frequency distribution

92. In constructing a polygon, each class grouping is represented by its _____ and then these are consecutively connected to one another.

ANSWER:
midpoint
TYPE: FI DIFFICULTY: Easy
KEYWORDS: polygon, class interval, midpoint

93. A _____ is a summary table in which numerical data are tallied into class intervals or categories.

ANSWER:
frequency distribution
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution, class interval

94. True or False: In general, grouped frequency distributions should have between 5 and 15 class intervals.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: frequency distribution, number of classes

95. True or False: The sum of relative frequencies in a distribution always equals 1.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: relative frequency

96. True or False: The sum of cumulative frequencies in a distribution always equals 1.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: cumulative distribution

97. True or False: In graphing two categorical data, the side-by-side bar chart is best suited when comparing joint responses.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: side-by-side bar chart

98. True or False: When constructing a frequency distribution, classes should be selected so that they are of equal width.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: frequency distribution

99. True or False: A research analyst was directed to arrange raw data collected on the yield of wheat, ranging from 40 to 93 bushels per acre, in a frequency distribution. He should choose 30 as the class interval width.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: frequency distribution, class interval

100. True or False: If the values of the seventh and eighth class in a cumulative percentage distribution are the same, we know that there are no observations in the eighth class.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: cumulative percentage distribution

101. True or False: One of the advantages of a pie chart is that it clearly shows that the total of all the categories of the pie adds to 100%.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: pie chart

102. True or False: The larger the number of observations in a numerical data set, the larger the number of class intervals needed for a grouped frequency distribution.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: class interval, frequency distribution

103. True or False: Determining the class boundaries of a frequency distribution is highly subjective.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: class boundaries, frequency distribution

104. True or False: The original data values cannot be determined once they are grouped into a frequency distribution table.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: frequency distribution

105. True or False: The percentage distribution cannot be constructed from the frequency distribution directly.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: percentage distribution, frequency distribution

106. True or False: The stem-and-leaf display is often superior to the frequency distribution in that it maintains the original values for further analysis.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display, frequency distribution

107. True or False: The relative frequency is the frequency in each class divided by the total number of observations.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: relative frequency distribution

108. True or False: Ogives are plotted at the midpoints of the class groupings.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ogives, midpoint

109. True or False: Percentage polygons are plotted at the boundaries of the class groupings.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: percentage polygons

110. True or False: The main principle behind the Pareto chart is the ability to separate the "vital few" from the "trivial many."

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: Pareto chart

111. True or False: A histogram can have gaps between the bars, whereas bar charts cannot have gaps.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: histogram, bar chart

112. True or False: Histograms are used for numerical data while bar charts are suitable for categorical data.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: histogram, bar chart

113. True or False: A Walmart store monitors customer complaints and organizes these complaints into six distinct categories. Over the past year, suppose the company has received 534 complaints. One possible graphical method for representing these data would be a Pareto chart.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: Pareto chart

114. True or False: Apple Computer, Inc. collected information on the age of their customers. Suppose the youngest customer was 12 and the oldest was 72. To study the distribution of the age among its customers, it can use a Pareto chart.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: Pareto chart

115. True or False: Apple Computer, Inc. collected information on the age of their customers. Suppose the youngest customer was 12 and the oldest was 72. To study the distribution of the age among its customers, it is best to use a pie chart.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: pie chart

116. True or False: Apple Computer, Inc. collected information on the age of their customers. Suppose the youngest customer was 12 and the oldest was 72. To study the distribution of the age among its customers, it can use a percentage polygon.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: percentage polygon

117. True or False: Apple Computer, Inc. collected information on the age of their customers. Suppose the youngest customer was 12 and the oldest was 72. To study the percentage of their customers who are below a certain age, it can use an ogive.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: ogive

118. True or False: If you wish to construct a graph of a relative frequency distribution, you would most likely construct an ogive first.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: Ogive

119. True or False: An ogive is a cumulative percentage polygon.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: Ogive, cumulative percentage polygon

120. True or False: A side-by-side bar chart is two histograms plotted side-by-side.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: side-by-side bar chart

121. True or False: A good choice for the number of class groups to use in constructing frequency distribution is to have at least 5 but no more than 15 class groups.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: number of classes

122. True or False: In general, a frequency distribution should have at least 8 class groups but no more than 20.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: number of classes

123. True or False: To determine the width of class interval, divide the number of class groups by the range of the data.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: class interval

124. True or False: The percentage polygon is formed by having the lower boundary of each class represent the data in that class and then connecting the sequence of lower boundaries at their respective class percentages.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: percentage polygon

125. True or False: A polygon can be constructed from a bar chart.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: polygon

126. To evaluate two categorical variables at the same time, a _____ could be developed.

ANSWER:
contingency or cross-classification table or side-by-side bar chart
TYPE: FI DIFFICULTY: Easy
KEYWORDS: contingency table, cross-classification table

127. Relationships in a contingency table can be examined more fully if the frequencies are converted into _____ .

ANSWER:
percentages or proportions
TYPE: FI DIFFICULTY: Easy
KEYWORDS: contingency table

SCENARIO 2-12
The table below contains the opinions of a sample of 200 people broken down by gender about the latest congressional plan to eliminate anti-trust exemptions for professional baseball.

	For	**Neutral**		**Against**	**Totals**
Female	38	54	12	104	
Male		12	36	48	96
Totals	50	90	60	200	

128. Referring to Scenario 2-12, construct a table of row percentages.

ANSWER:

For		**Neutral**	**Against**	**Totals**
Female	36.54	51.92	11.54	100.00
Male	12.50	37.50	50.00	100.00
Totals	25.00	45.00	30.00	100.00

TYPE: PR DIFFICULTY: Easy
KEYWORDS: row percentages

129. Referring to Scenario 2-12, construct a table of column percentages.

ANSWER:

For	Neutral	Against	Totals
Female	76.00	60.00	20.00	52.00
Male	24.00	40.00	80.00	48.00
Totals	100.00	100.00	100.00	100.00

TYPE: PR DIFFICULTY: Easy
KEYWORDS: column percentages

130. Referring to Scenario 2-12, construct a table of total percentages.

ANSWER:

For	Neutral	Against	Totals
Female	19.00	27.00	6.00	52.00
Male	6.00	18.00	24.00	48.00
Totals	25.00	45.00	30.00	100.00

TYPE: PR DIFFICULTY: Easy
KEYWORDS: total percentages

131. Referring to Scenario 2-12, of those for the plan in the sample, _____ percent were females.

ANSWER:
76%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

132. Referring to Scenario 2-12, of those neutral in the sample, _____ percent were males.

ANSWER:
40%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

133. Referring to Scenario 2-12, of the males in the sample, _____ percent were for the plan.

ANSWER:
12.50%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

134. Referring to Scenario 2-12, of the females in the sample, _____ percent were against the plan.

ANSWER:
11.54%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

135. Referring to Scenario 2-12, of the females in the sample, _____ percent were either neutral or against the plan.

ANSWER:
63.46% or (51.92+11.54)%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

136. Referring to Scenario 2-12, _____ percent of the 200 were females who were against the plan.

ANSWER:
6%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

137. Referring to Scenario 2-12, _____ percent of the 200 were males who were neutral.

ANSWER:
18%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

138. Referring to Scenario 2-12, _____ percent of the 200 were females who were either neutral or against the plan.

ANSWER:
33%
TYPE: FI DIFFICULTY: Difficult
KEYWORDS: contingency table

139. Referring to Scenario 2-12, _____ percent of the 200 were males who were not against the plan.

ANSWER:
24%
TYPE: FI DIFFICULTY: Difficult
KEYWORDS: contingency table

140. Referring to Scenario 2-12, _____ percent of the 200 were not neutral.

ANSWER:
55%
TYPE: FI DIFFICULTY: Difficult
KEYWORDS: contingency table, row percentages

141. Referring to Scenario 2-12, _____ percent of the 200 were against the plan.

ANSWER:
30%

TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, row percentages

142. Referring to Scenario 2-12, _____ percent of the 200 were males.

ANSWER:
48%
TYPE: FI DIFFICULTY: Easy
KEYWORDS: contingency table, column percentages

143. Referring to Scenario 2-12, if the sample is a good representation of the population, we can expect _____ percent of the population will be for the plan.

ANSWER:
25%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, row percentages

144. Referring to Scenario 2-12, if the sample is a good representation of the population, we can expect _____ percent of the population will be males.

ANSWER:
48%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: column percentages, contingency table

145. Referring to Scenario 2-12, if the sample is a good representation of the population, we can expect _____ percent of those for the plan in the population will be males.

ANSWER:
24%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

146. Referring to Scenario 2-12, if the sample is a good representation of the population, we can expect _____ percent of the males in the population will be against the plan.

ANSWER:
50%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

147. Referring to Scenario 2-12, if the sample is a good representation of the population, we can expect _____ percent of the females in the population will not be against the plan.

ANSWER:
88.46% or (36.54+51.92)
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table

SCENARIO 2-13
Given below is the stem-and-leaf display representing the amount of detergent used in gallons (with leaves in 10ths of gallons) in a day by 25 drive-through car wash operations in Phoenix.

```
 9 | 147
10 | 02238
11 | 135566777
12 | 223489
13 | 02
```

148. Referring to Scenario 2-13, if a frequency distribution for the amount of detergent used is constructed, using "9.0 but less than 10.0 gallons" as the first class, the frequency of the "11.0 but less than 12.0 gallons" class would be _____.

ANSWER:
9
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frequency distribution

149. Referring to Scenario 2-13, if a percentage histogram for the detergent data is constructed, using "9.0 but less than 10.0 gallons" as the first class, the percentage of drive-through car wash operations that use "12.0 but less than 13.0 gallons" of detergent would be _____.

ANSWER:
24%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, percentage distribution

150. Referring to Scenario 2-13, if a percentage histogram for the detergent data is constructed, using "9.0 but less than 10.0 gallons" as the first class, what percentage of drive-through car wash operations use less than 12 gallons of detergent in a day?

ANSWER:
68%
TYPE: FI DIFFICULTY: Easy
KEYWORDS: percentage distribution, cumulative relative frequency

151. Referring to Scenario 2-13, if a relative frequency or percentage distribution for the detergent data is constructed, using "9.0 but less than 10.0 gallons" as the first class, what percentage of drive-through car wash operations use at least 10 gallons of detergent in a day?

ANSWER:
88%
TYPE: FI DIFFICULTY: Easy
KEYWORDS: relative frequency distribution, percentage distribution

152. Referring to Scenario 2-13, if a relative frequency or percentage distribution for the detergent data is constructed, using "9.0 but less than 10.0 gallons" as the first class, what percentage of drive-through car wash operations use at least 10 gallons but less than 13 gallons of detergent in a day?

ANSWER:
80%
TYPE: FI DIFFICULTY: Easy
KEYWORDS: relative frequency distribution, percentage distribution

153. Referring to Scenario 2-13, construct a frequency distribution for the detergent data, using "9.0 but less than 10.0 gallons" as the first class.

ANSWER:

Purchases (gals)	Frequency
9.0 but less than 10.0	3
10.0 but less than 11.0	5
11.0 but less than 12.0	9
12.0 but less than 13.0	6
13.0 but less than 14.0	2

TYPE: PR DIFFICULTY: Moderate
KEYWORDS: frequency distribution

154. Referring to Scenario 2-13, construct a relative frequency or percentage distribution for the detergent data, using "9.0 but less than 10.0" as the first class.

ANSWER:
Gasoline

Purchases (gals)	Percentage
9.0 but less than 10.0	12%
10.0 but less than 11.0	20
11.0 but less than 12.0	36
12.0 but less than 13.0	24
13.0 but less than 14.0	8

TYPE: PR DIFFICULTY: Moderate
KEYWORDS: relative frequency distribution, percentage distribution

155. Referring to Scenario 2-13, construct a cumulative percentage distribution for the detergent data if the corresponding frequency distribution uses "9.0 but less than 10.0" as the first class.

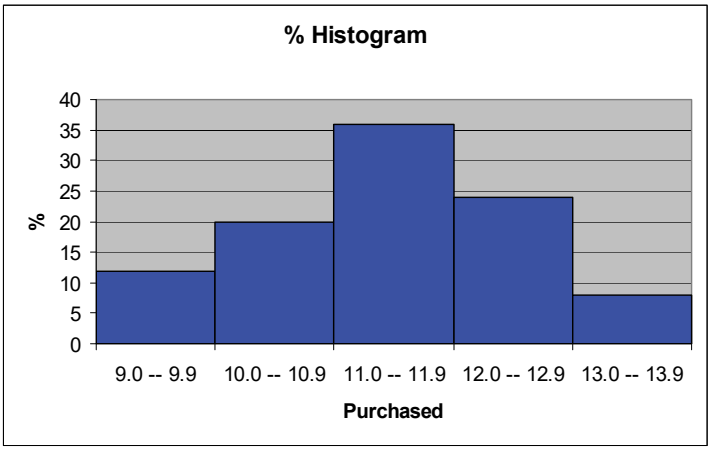
ANSWER:

Gasoline Purchases (gals)	Frequency Less Than	Percentage Less Than
9.0 but less than 10.0	3	12
10.0 but less than 11.0	8	32
11.0 but less than 12.0	17	68
12.0 but less than 13.0	23	92
13.0 but less than 14.0	25	100

TYPE: PR DIFFICULTY: Moderate
KEYWORDS: cumulative percentage distribution

156. Referring to Scenario 2-13, construct a percentage histogram for the detergent data, using "9.0 but less than 10.0" as the first class.

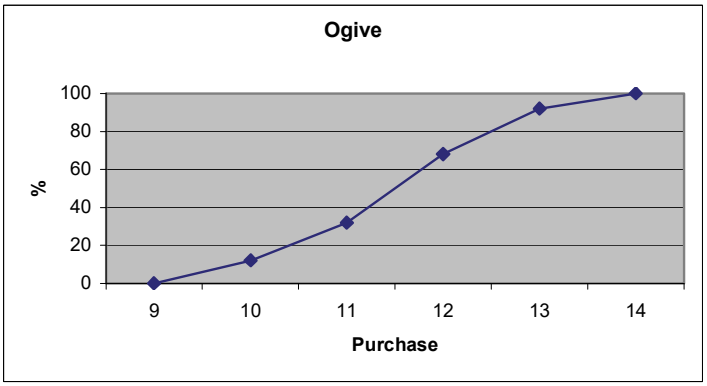
ANSWER:



TYPE: PR DIFFICULTY: Moderate
KEYWORDS: histogram, frequency distribution

157. Referring to Scenario 2-13, construct a cumulative percentage polygon for the detergent data if the corresponding frequency distribution uses "9.0 but less than 10.0" as the first class.

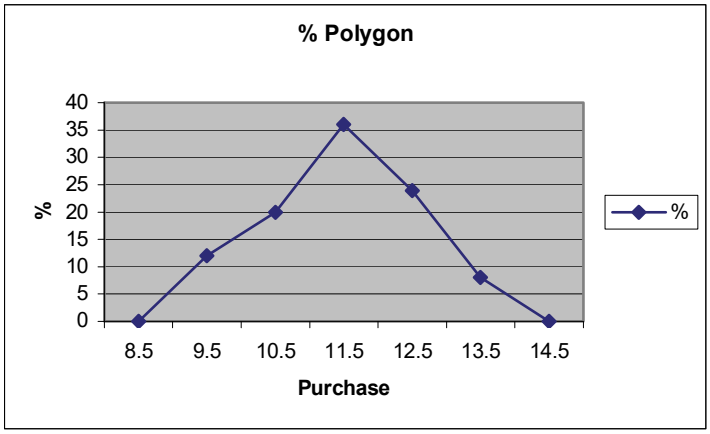
ANSWER:



TYPE: PR DIFFICULTY: Moderate
KEYWORDS: cumulative percentage polygon

158. Referring to Scenario 2-13, construct a percentage polygon for the detergent data if the corresponding frequency distribution uses "9.0 but less than 10.0" as the first class.

ANSWER:



TYPE: PR DIFFICULTY: Moderate
KEYWORDS: percentage distribution, percentage polygon

SCENARIO 2-14
The table below contains the number of people who own a portable Blu-ray player in a sample of 600 broken down by gender.

Own a Portable Blu-ray player	**Male**	**Female**
Yes	96	40
No	224	240

159. Referring to Scenario 2-14, construct a table of row percentages.

ANSWER:

Own	**Male**	**Female**	**Total**
Yes	70.59%	29.41%	100.00%
No	48.28%	51.72%	100.00%
Total	53.33%	46.67%	100.00%

TYPE: PR DIFFICULTY: Easy
KEYWORDS: row percentages

160. Referring to Scenario 2-14, construct a table of column percentages.

ANSWER:

Own	Male	Female	Total
Yes	30.00%	14.29%	22.67%
No	70.00%	85.71%	77.33%
Total	100.00%	100.00%	100.00%

TYPE: PR DIFFICULTY: Easy
KEYWORDS: column percentages

161. Referring to Scenario 2-14, construct a table of total percentages.

ANSWER:

Own	Male	Female	Total
Yes	16.00%	6.67%	22.67%
No	37.33%	40.00%	77.33%
Total	53.33%	46.67%	100.00%

TYPE: PR DIFFICULTY: Easy
KEYWORDS: total percentages

162. Referring to Scenario 2-14, of those who owned a portable Blu-ray player in the sample, _____ percent were females.

ANSWER:
29.41%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, row percentages

163. Referring to Scenario 2-14, of those who did not own a portable Blu-ray player in the sample, _____ percent were males.

ANSWER:
48.28%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, row percentages

164. Referring to Scenario 2-14, of the males in the sample, _____ percent owned a portable Blu-ray player.

ANSWER:
30%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

165. Referring to Scenario 2-14, of the females in the sample, _____ percent did not own a portable Blu-ray player.

ANSWER:
85.71%

TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

166. Referring to Scenario 2-14 of the females in the sample, _____ percent owned a portable Blu-ray player.

ANSWER:
14.29%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

167. Referring to Scenario 2-14, _____ percent of the 600 were females who owned a portable Blu-ray player.

ANSWER:
6.67%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, total percentage

168. Referring to Scenario 2-14, _____ percent of the 600 were males who owned a portable Blu-ray player.

ANSWER:
16%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, total percentage

169. Referring to Scenario 2-14, _____ percent of the 600 were females who either owned or did not own a portable Blu-ray player.

ANSWER:
46.67%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, total percentage

170. Referring to Scenario 2-14, _____ percent of the 600 were males who did not own a portable Blu-ray player.

ANSWER:
37.33%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, total percentage

171. Referring to Scenario 2-14, _____ percent of the 600 owned a portable Blu-ray player.

ANSWER:
22.67%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

172. Referring to Scenario 2-14, _____ percent of the 600 did not own a portable Blu-ray player.

ANSWER:
77.33%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

173. Referring to Scenario 2-14, _____ percent of the 600 were females.

ANSWER:
46.67%
TYPE: FI DIFFICULTY: Easy
KEYWORDS: contingency table, row percentages

174. Referring to Scenario 2-14, if the sample is a good representation of the population, we can expect _____ percent of the population will own a portable Blu-ray player.

ANSWER:
22.67%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

175. Referring to Scenario 2-14, if the sample is a good representation of the population, we can expect _____ percent of the population will be males.

ANSWER:
53.33%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

176. Referring to Scenario 2-14, if the sample is a good representation of the population, we can expect _____ percent of those who own a portable Blu-ray player in the population will be males.

ANSWER:
70.59%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, row percentages

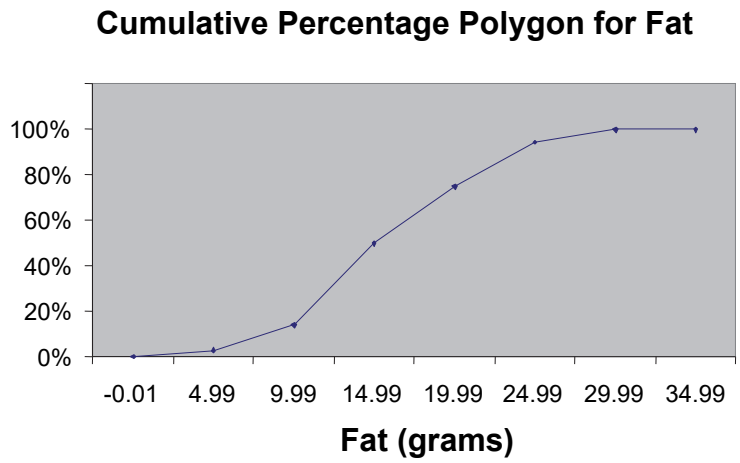
177. Referring to Scenario 2-14, if the sample is a good representation of the population, we can expect _____ percent of the males in the population will own a portable Blu-ray player.

ANSWER:
30%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

178. Referring to Scenario 2-14, if the sample is a good representation of the population, we can expect _____ percent of the females in the population will not own a portable Blu-ray player.

ANSWER:
85.71%
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: contingency table, column percentages

SCENARIO 2-15
The figure below is the ogive for fat (in grams) for a sample of 36 pizza products where the upper boundaries of the intervals are: 5, 10, 15, 20, 25, and 30.



179. Referring to Scenario 2-15, roughly what percentage of pizza products contains less than 10 grams of fat?
    a) 3%
    b) 14%
    c) 50%
    d) 75%

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: cumulative percentage polygon, ogive, interpretation

180. Referring to Scenario 2-15, what percentage of pizza products contains at least 20 grams of fat?
    a) 5%
    b) 25%
    c) 75%
    d) 96%

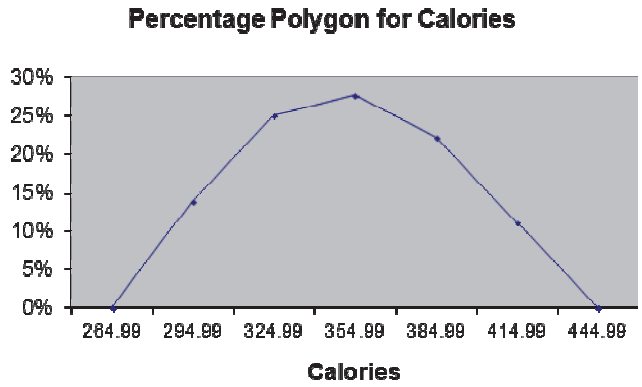
ANSWER:
b

TYPE: MC DIFFICULTY: Easy
KEYWORDS: cumulative percentage polygon, ogive, interpretation

181. Referring to Scenario 2-15, what percentage of pizza products contains between 10 and 25 grams of fat?
    a) 14%
    b) 44%
    c) 62%
    d) 81%

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: cumulative percentage polygon, ogive, interpretation

SCENARIO 2-16
The figure below is the percentage polygon for the number of calories for a sample of 36 pizzas products where the upper limits of the intervals are: 310, 340, 370, 400 and 430.



182. Referring to Scenario 2-16, roughly what percentage of pizza products contains between 400 and 430 calories?
    a) 0%
    b) 11%
    c) 89%
    d) 100%

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: percentage polygon, interpretation

183. Referring to Scenario 2-16, roughly what percentage of pizza products contains between 340 and 400 calories?
    a) 22%
    b) 25%
    c) 28%
    d) 50%

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: percentage polygon, interpretation

184. Referring to Scenario 2-16, roughly what percentage of pizza products contains at least 340 calories?
    a) 25%
    b) 28%
    c) 39%
    d) 61%

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: percentage polygon, interpretation

SCENARIO 2-17
The following table presents total retail sales in millions of dollars for the leading apparel companies over a two-year period in the past.

APPAREL COMPANY	**Year 1**	**Year 2**
Gap	1,159.0	962.0
TJX	781.7	899.0
Limited	596.5	620.4
Kohl's	544.9	678.9
Nordstrom	402.6	418.3
Talbots	139.9	130.1
Ann Taylor	114.2	124.8

185. Referring to Scenario 2-17, construct a table of column percentages.

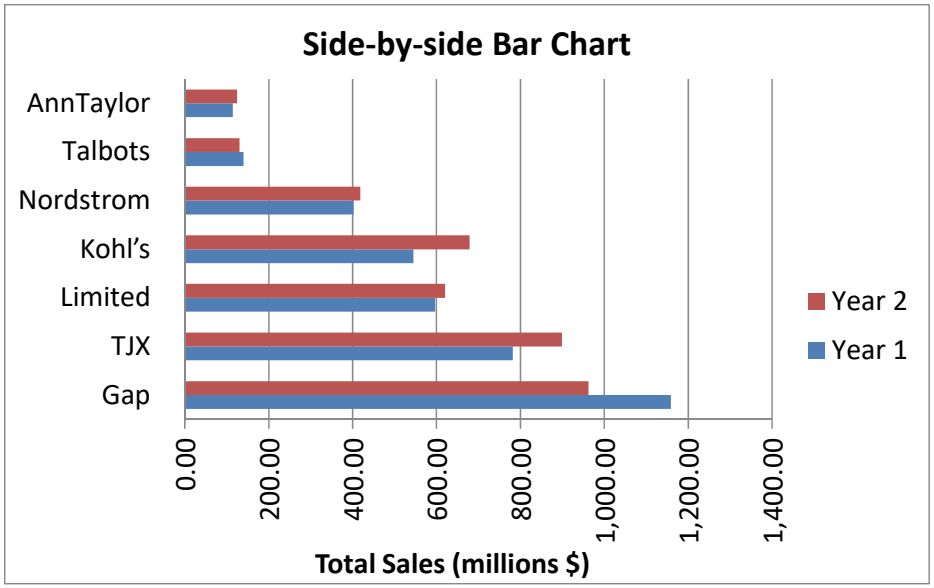
ANSWER:

Apparel Company	Year 1	Year 2
Gap	31.00%	25.09%
TJX	20.91%	23.45%
Limited	15.95%	16.18%
Kohl's	14.57%	17.71%
Nordstrom	10.77%	10.91%
Talbots	3.74%	3.39%
Ann Taylor	3.05%	3.26%
Total	100.00%	100.00%

TYPE: PR DIFFICULTY: Moderate
KEYWORDS: column percentages

186. Referring to Scenario 2-17, construct a side-by-side bar chart.

ANSWER:



TYPE: PR DIFFICULTY: Moderate
KEYWORDS: column percentages, side-by-side bar chart

187. True or False: Referring to Scenario 2-17, in general, retail sales for the apparel industry have seen a modest growth between Year 1 and Year 2.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: column percentages, side-by-side bar chart, interpretation

188. Referring to Scenario 2-17, among the 8 stores, _____ saw a sales decline.

ANSWER:
Gap and Talbots
TYPE: FI DIFFICULTY: Easy
KEYWORDS: column percentages, side-by-side bar chart, interpretation

SCENARIO 2-18
The stem-and-leaf display below shows the result of a survey on 50 students on their satisfaction with their school with the higher scores represent higher level of satisfaction.

Statistics	
Sample Size	50
Mean	71.06
Median	73.5
Std. Deviation	14.13695
Minimum	41
Maximum	97

Stem-and-Leaf Display

Stem unit 10

4	1 3 6 6 7
5	0 0 3 8 9
6	0 1 1 4 4 5 7 7 9 9
7	0 0 0 1 3 4 4 5 5 6 6 6 7 8 8
8	0 1 1 3 4 4 5 7 7 8 9
9	0 2 2 7

189. Referring to Scenario 2-18, what was the highest level of satisfaction?

ANSWER:
97
TYPE: PR DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

190. Referring to Scenario 2-18, what was the lowest level of satisfaction?

ANSWER:
41
TYPE: PR DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

191. Referring to Scenario 2-18, how many students have a satisfaction level in the 50s?

ANSWER:
5
TYPE: PR DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

192. Referring to Scenario 2-18, how many students have a satisfaction level below 60?

ANSWER:
10
TYPE: PR DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

193. Referring to Scenario 2-18, how many students have a satisfaction level of at least 80?

ANSWER:
15
TYPE: PR DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

194. True or False: Referring to Scenario 2-18, the level of satisfaction is concentrated around 75.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

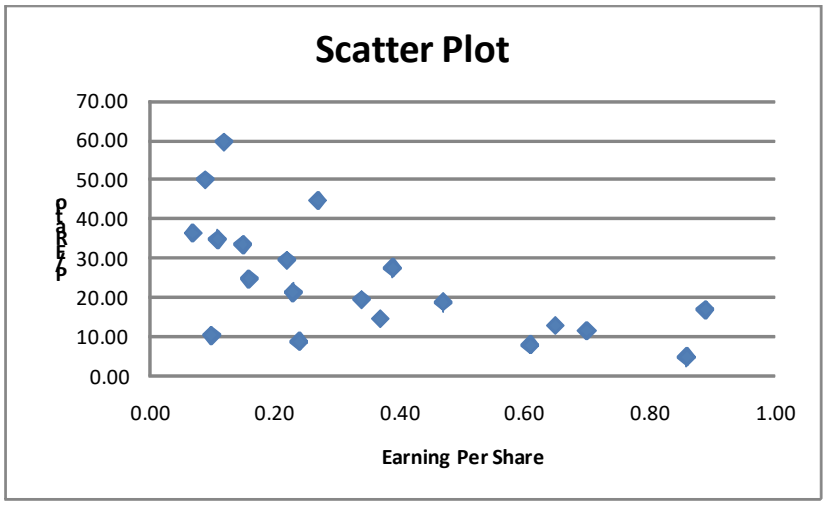
195. True or False: Referring to Scenario 2-18, if a student is randomly selected, his/her most likely level of satisfaction will be in the 70s among the 40s, 50s, 60s, 70s, 80s and 90s.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

196. True or False: Referring to Scenario 2-18, if a student is randomly selected, his/her most likely level of satisfaction will be in the 60s among the 40s, 50s, 60s, 70s, 80s and 90s.

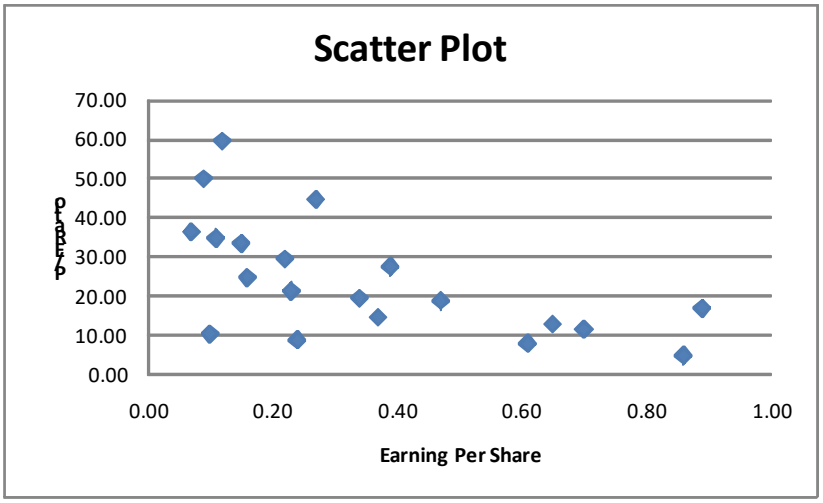
ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: stem-and-leaf display

197. True or False: Given below is the scatter plot of the price/earnings ratio versus earnings per share of 20 U.S. companies. There appears to be a negative relationship between price/earnings ratio and earnings per share.



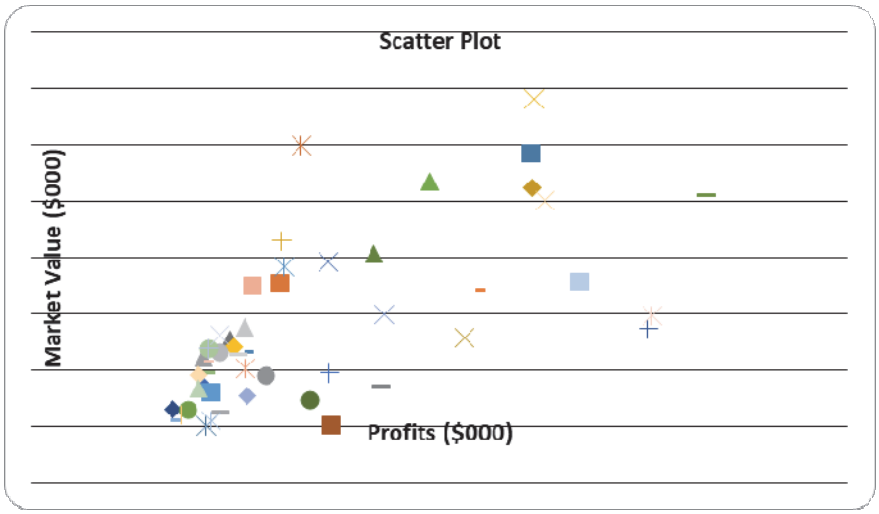
ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: scatter plot

198. True or False: Given below is the scatter plot of the price/earnings ratio versus earnings per share of 20 U.S. companies. There appear to be a positive relationship between price/earnings ratio and earnings per share.



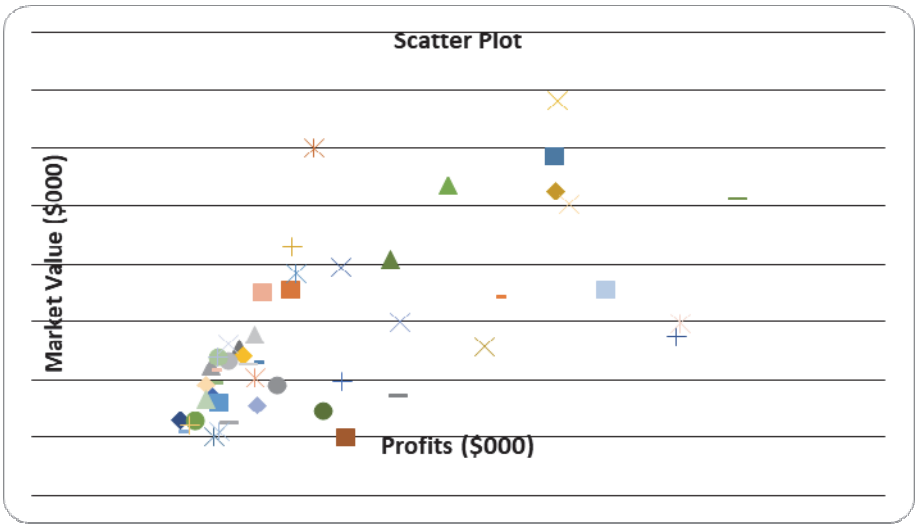
ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: scatter plot

199. True or False: Given below is the scatter plot of the market value (thousands$) and profit (thousands$) of 50 U.S. companies. Higher market values appear to be associated with higher profits.



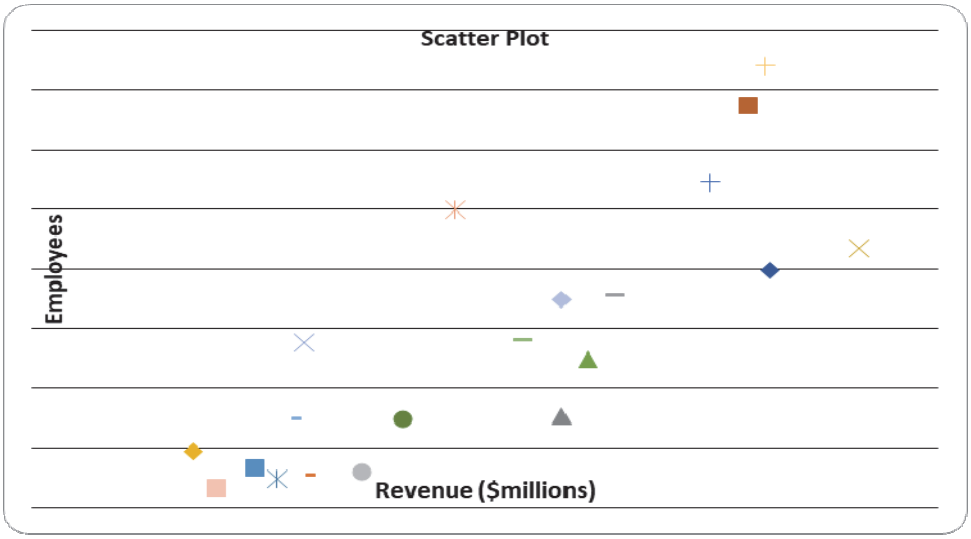
ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: scatter plot

200. True or False: Given below is the scatter plot of the market value (thousands$) and profit (thousands$) of 50 U.S. companies. There appears to be a negative relationship between market value and profit.



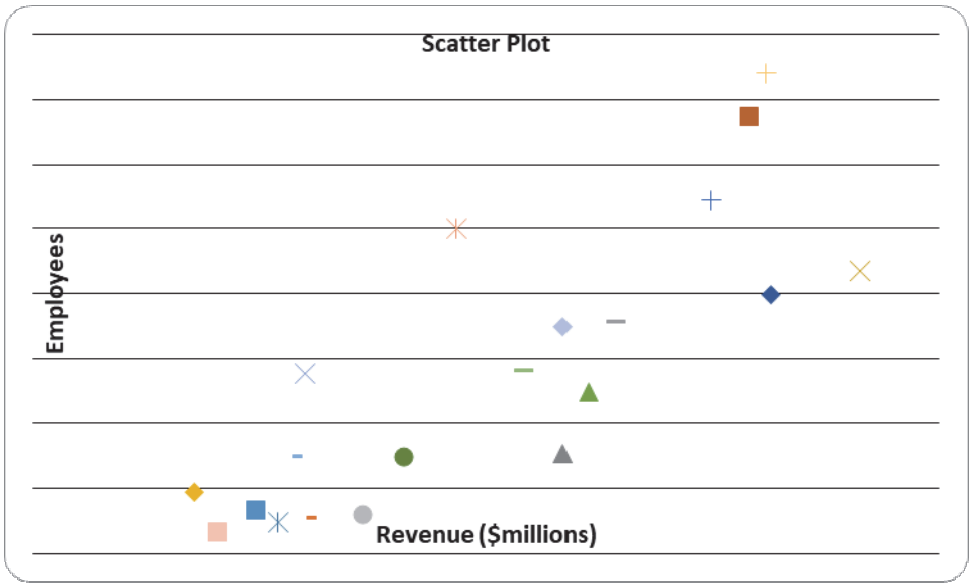
ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: scatter plot

201. True or False: Given below is the scatter plot of the number of employees and the total revenue ($millions) of 20 U.S. companies. There appears to be a positive relationship between total revenue and the number of employees.



ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: scatter plot

202. True or False: Given below is the scatter plot of the number of employees and the total revenue ($millions) of 20 U.S. companies. Companies that have higher numbers of employees appear to also have higher total revenue.



ANSWER: True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: scatter plot

203. The addition of visual elements that either fail to convey any useful information or that obscure important points about the data to enhance the visualization of data is called _____.

ANSWER:
chart junk
TYPE: FI DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

204. True or False: The Guidelines for Developing Visualizations recommend avoiding uncommon chart type such as doughnut, radar, cone and pyramid charts.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

205. True or False: The Guidelines for Developing Visualizations recommend using the simplest possible visualization.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

206. True or False: The Guidelines for Developing Visualizations recommend labeling all axes only when it is possible.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

207. True or False: The Guidelines for Developing Visualizations recommend using varying scale to conserve precious space whenever possible.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

208. True or False: The Guidelines for Developing Visualizations recommend always starting the scale for a vertical axis at zero.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

209. True or False: The Guidelines for Developing Visualizations recommend always including a scale for each axis if the chart contains axes.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: challenges in visualizing data

210. True or False: When you work with many variables, you must be mindful of the limits of the information technology as well as the limits of the ability of your readers to perceive and comprehend your results.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: organizing and visualizing many variables

211. True or False: A multidimensional contingency table allows you to tally the responses of more than two continuous variables.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: multidimensional contingency table, organizing and visualizing many variables

212. True or False: A multidimensional contingency table allows you to tally the responses of more than two categorical variables.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: multidimensional contingency table, organizing and visualizing many variables.

213. Microsoft Excel creates distribution tables using user-defined *classes*.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: Classes and Excel bins